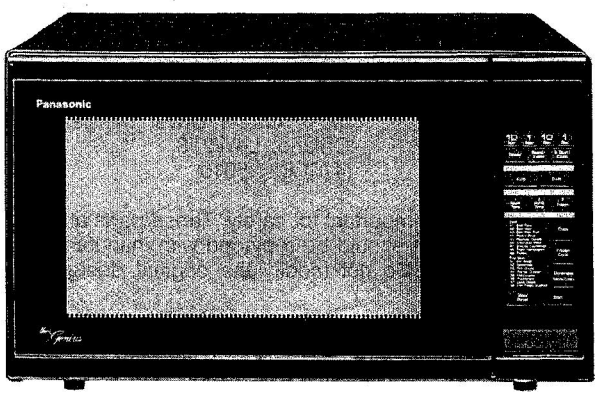
ORDER NO. CAD8905014[illegible]
E1

Service Manual

Microwave Oven



MODEL	U.S.A.	CANADA
	APH	CPH
NN-6309	○	—
NN-6349	—	○
NN-6369	○	—
NN-6479	○	—
NN-6409	○	—
NN-6449	—	○
NN-6469	○	—
NN-6509	○	○
NN-6539	○	—
NN-6549	—	○
NN-6809	○	—
NN-6849	—	○
NN-6859	—	○
NN-7369	○	—
NN-7409	○	—
NN-7449	—	○
NN-7509	○	○
NN-7809	○	—

Specifications

	NN-6XXX SERIES (FAMILY SIZE)	NN-7XXX SERIES (FULL SIZE)
Power Source :	120 V AC Single Phase 60 Hz	
Power Requirement :	1,380 W : (12.0 A)	
Output :	700 W : Full Power	
Microwave Frequency :	2,450 MHz	
Timer :	99 min. 99 sec. (Digital)	
Outside Dimensions :	21-7/8" (W) X 17" (D) X 12" (H) 555 mm (W) X 431 mm (D) X 306 mm (H)	23-7/16" (W) X 17" (D) X 14" (H) 595 mm (W) X 431 mm (D) X 356 mm (H)
Oven Cavity Dimensions :	14-3/4" (W) X 15-1/8" (D) X 8-1/4" (H) 375 mm (W) X 385 mm (D) X 209 mm (H)	16-5/16" (W) X 15-1/8" (D) X 10-3/16" (H) 415 mm (W) X 385 mm (D) X 259 mm (H)
Weight :	38 lbs (17.5 kg)	42 lbs (19.5 kg)
Specifications subject to change without notice.		

Panasonic®

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WARNING

1. This product should be serviced only by trained qualified personnel.
2. Though this product has been manufactured in compliance with:
   "Federal Performance Standard 21 CFR Subchapter J" (D.H.H.S.): U.S.A. models
   or "Radiation Emitting Devices Act" (NHW): Canadian models
   it is very important all repairs should be made in accordance with procedures described in this manual to avoid being exposed to excessive microwave radiation.
3. Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakage".
4. If the unit cannot be repaired on site, advise the customer not to use until unit be repaired.
5. Any serviceman who learns of any accident pertaining to microwave radiation leakage including the oven operating with open door should immediately notify the appropriate address listed below and Center for Devices and Radiological Health, DHHS.

IN U.S.A. (MSC)	Matsushita Services Company 50 Meadowland Parkway, Secaucus, New Jersey 07094 Attention: Engineering Support Division. (201) 348-7000	IN PUERTO RICO (PSC)	PSC San Gabriel Industrial Park 65th Infantry Ave. Km.9.5 Carolina, Puerto Rico 00630 (809) 750-4300
IN HAWAII (PHI)	PHI 99-859 Iwaiwa Street P.O. Box 774 Honolulu, Hawaii 96808-0774 (808) 488-7779	IN CANADA (MELCA)	Matsushita Electric of Canada Limited 5770 Ambler Drive, Mississauga, Ontario, L4W2T3 (416) 624-5010

6. There are special components used in the microwave oven which are important for safety. These parts are marked with a ⚠ on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the original design.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(A) Do not operate or allow the oven to be operated with the door open.

(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
   (1) Interlock operation
   (2) Proper door closing
   (3) Seal and sealing surfaces (arcing, wear, and other damage)
   (4) Damage to or loosening of hinges and latches.
   (5) Evidence of dropping or abuse

(C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity and connections.

(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

(E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

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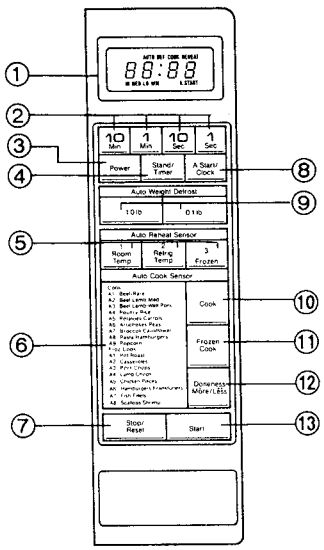
FEATURE CHART

FEATURE \ MODEL		NN-7809 NN-6809 NN-6849 NN-6859	NN-7509 NN-6509 NN-6549 NN-6539	NN-7409 NN-7449 NN-6449 NN-6409 NN-6479	NN-6309 NN-6349	NN-6469	NN-7369 NN-6369
CYCLIC DEFROST		○	○	○	○	○	○
MEMORY STAGE		3	3	2	2	2	2
AUTO SENSOR COOKING	COOK	○	—	—	—	—	—
	FROZ-COOK	○	—	—	—	—	—
AUTO SENSOR REHEAT		○	—	—	—	—	—
AUTO WEIGHT DEFROST		○	○	○	○	○	—
AUTO WEIGHT COOK		—	○	—	—	—	—
AUTO REHEAT		—	○	○	—	○	—
MEMORY RECIPE KEY (INCLUDES POPCORN)		—	○	—	—	—	—
AUTO START		○	○	—	—	—	—
STAND/TIMER		○	○	○	○	○	○
DIGITAL CLOCK		○	○	○	○	○	○

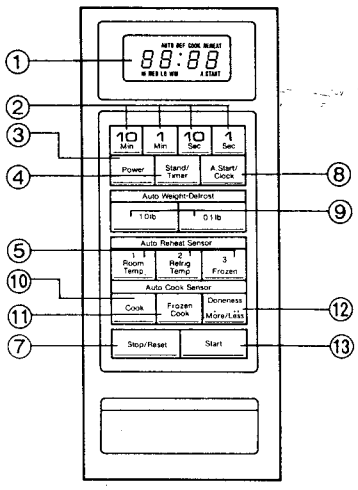
CONTROL PANEL

Control Panel

NN-7809



NN-6809/NN-5809

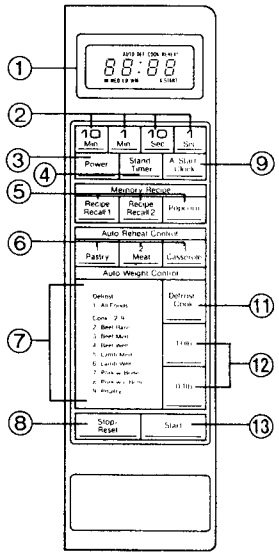


Controls with Auto Count-Up Feature★

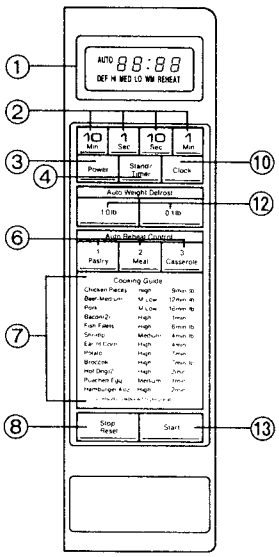
① **Display Window**
② **Time Pads★**
③ **Power Pad★**
④ **Stand/Timer Pad**
⑤ **Auto Sensor Reheat Pads★**
⑥ **Cooking Guide**
⑦ **Stop/Reset Pad**
⑧ **A. Start/Clock Pad**
⑨ **Auto Weight Defrost 1.0 Pound/0.1 Pound Pads★**
⑩ **Auto Sensor Cook Pad★**
⑪ **Auto Sensor Frozen Cook Pad★**
⑫ **Doneness Control Pad More Pad/Less Pad**
⑬ **Start Pad**

Control Panel

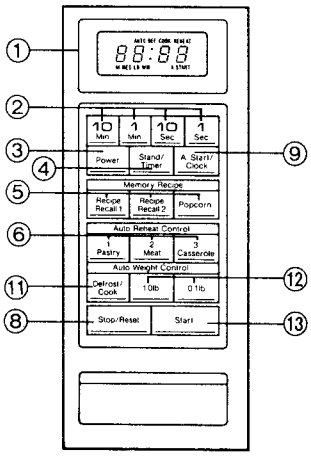
NN-7509



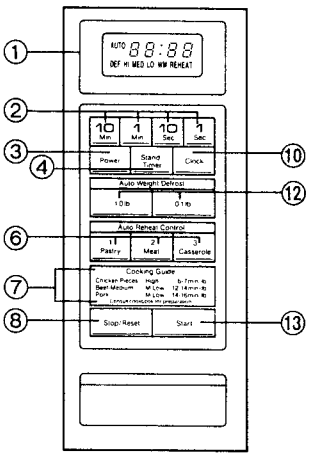
NN-7409



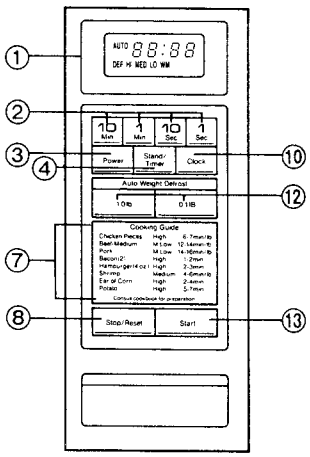
NN-6509/NN-6539/NN-5509/NN-5539



NN-6409/NN-5409/NN-5439



NN-6309/NN-5309



Controls with Auto Count-Up Feature*

① Display Window
② Time Pads*
③ Power Pad*
④ Stand/Timer Pad
⑤ Memory Recipe Pad
⑥ Auto Reheat Control Pads*
⑦ Cooking Guide
⑧ Stop/Reset Pad
⑨ A. Start/Clock Pad
⑩ Clock Pad
⑪ Auto Weight Defrost/Cook Pad*
⑫ 1.0 Pound/0.1 Pound Pads*
⑬ Start Pad

OPERATION AND DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE

1. To Set Clock

OPERATION	DISPLAY
1. Plug the power supply cord into wall receptacle.	88:88
2. Tap [Clock] pad.	☼
3. Enter time of day (TOD) by tapping appropriate [number] pads.	11☼25
4. Tap [Clock] pad. TOD has now been registered into the digital programmer circuit and will count up by minutes.	11:25

2. Time Cooking For Two Stage

OPERATION	DISPLAY
1. Place a water load in the oven.	
2. Tap [Power] pad once for High power. (1st stage)	HI
3. Set for 5 seconds by tapping [Number] pad.	5 HI
4. Tap [Power] pad 3 times for Medium power. (2nd stage)	MED
5. Set for 10 seconds by tapping [Number] pad.	10 MED
6. Tap [Start] pad.	5 HI
7. When first stage cooking time has elapsed, oven automatically switches to 2nd stage cooking.	10 MED
8. When 2nd stage cooking time has elapsed, oven beeps 5 times and shuts off.	

3. Time Cooking

OPERATION	DISPLAY
1. Place a water load in the oven.	
2. Tap [Power] pad.	HI
3. Tap [3] pad for setting M.Low power.	MED LO
4. Tap [Time] pad.	0 MED LO
5. Set for 1 minute by tapping [Number] pads.	100 MED LO
6. Tap [Start] pad.	59 MED LO
7. When cooking time has elapsed, oven beeps 5 times and shuts off.	

4. Auto Weight Defrost

OPERATION	DISPLAY
1. Tap Auto Weight Defrost Pad	AUTO DEF 1
2. Set the weight for 3 pounds by tapping 1.0 (lb) pad three times.	AUTO DEF 3.0
3. Tap Start Pad.	AUTO DEF 36 00
4. Tap Stop/Reset Pad twice Oven shuts off.	TOD reappears in the display window.

5. Auto Reheat

OPERATION	DISPLAY
1. Tap Auto Reheat 1 Pad 4 times.	AUTO REHEAT 1 - 4
2. Tap Start Pad.	AUTO REHEAT 50
3. When cooking time has elapsed. • Oven beeps five times and shuts off.	• TOD reappears in the display window.

6. Auto Sensor Cooking

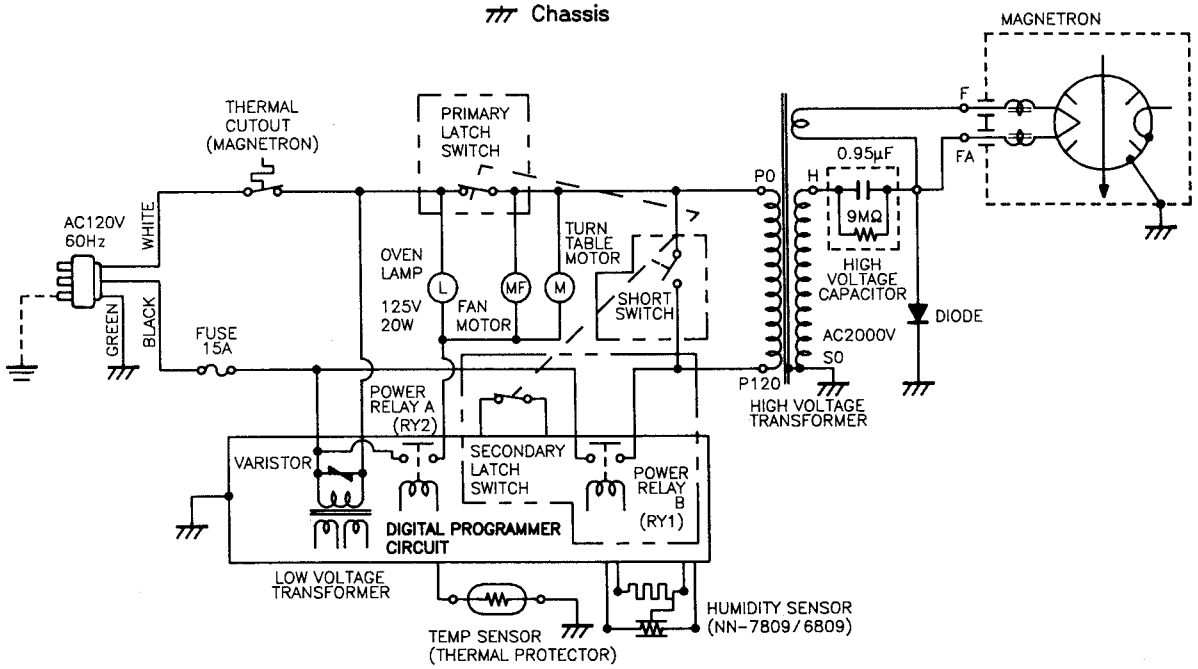
NOTE: Make sure that the outer panel is installed before Auto Sensor Cooking Test, since Auto Sensor function does not operate properly without the outer panel.

OPERATION	DISPLAY
1. Pour 150 ± 15cc (4.5 ± 1/2 ozs) of room temperature water in a beaker, securely cover the top of the beaker with plastic wrap and place the beaker in the center of the oven.	COVER THE TOP OF THE BEAKER WITH PLASTIC WRAP
2. Tap Auto Sensor COOK Pad 8 times.	AUTO COOK 8
3. Tap Start Pad.	AUTO COOK 8
4. The humidity sensor detects steam about 2 to 5 minutes after the Start Pad is tapped. Auto Sensor Cooking (T1) automatically switches to time cooking (T2). "A8" disappears with beep sounds and the remainder of cooking time appears in display window. NOTE: Cooking time will vary depending on the water temperature, the shape of beaker or the power source voltage. NOTE: K factor for A8 program is 0.1.	AUTO COOK 9 AUTO COOK 27 NOTE: If 9 to 27 (9 seconds to 27 seconds) appears, AUTO SENSOR FUNCTION is normal.
5. When the balance of cooking time has elapsed, oven stops and beeps five times.	• TOD reappears in the display window.

SCHEMATIC DIAGRAM (Touch Control models) (APH)

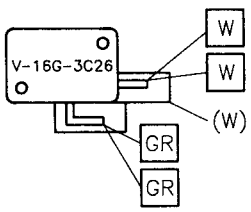
NOTE: Door is closed.
Unit is not operated.

Ground
Chassis

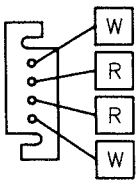


WIRING DIAGRAM

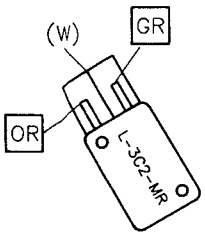
NOTE: *When replacing, check the lead wire colour as shown.
*Colours shown by ( ) indicate colours of lead wire connector housing.



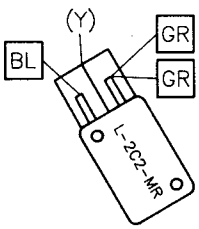
PRIMARY LATCH SWITCH TOP



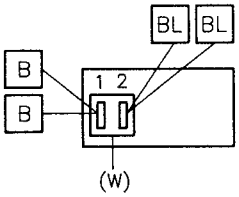
HUMIDITY SENSOR



SECONDARY LATCH SWITCH BOTTOM (OUTSIDE)



SHORT SWITCH BOTTOM (INSIDE)



POWER RELAY B (RY1)

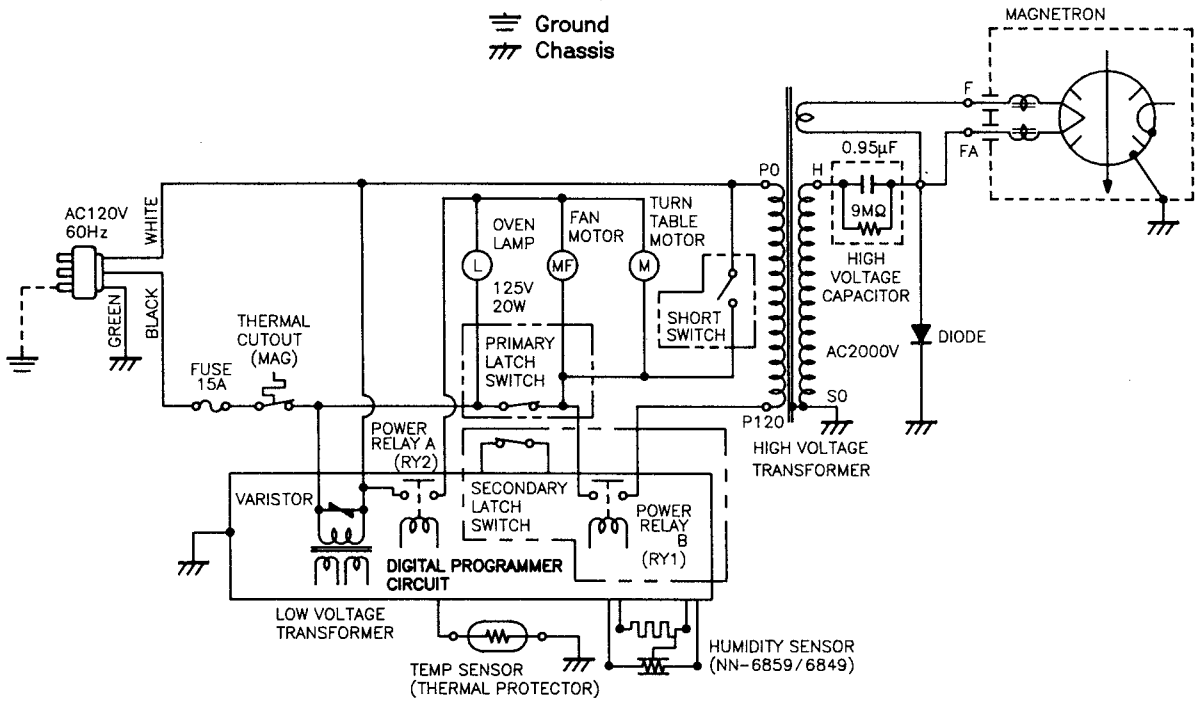
SYMBOL	COLOUR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

S-515 APH
51-003

SCHEMATIC DIAGRAM (Touch Control models) (CPH)

NOTE: Door is closed.
Unit is not operated.

Ground
Chassis



WIRING DIAGRAM

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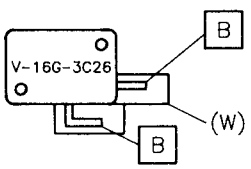
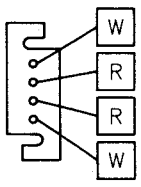
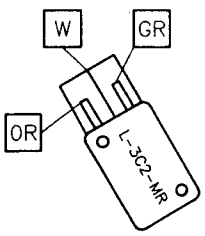


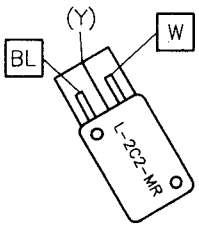
PRIMARY LATCH SWITCH
TOP



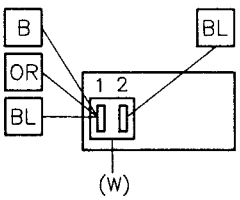
HUMIDITY SENSOR



SECONDARY LATCH SWITCH
BOTTOM (OUTSIDE)



SHORT SWITCH
BOTTOM (INSIDE)



POWER RELAY B
(RY1)

SYMBOL	COLOUR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

S-518 CPH
51-004

DESCRIPTION OF OPERATING SEQUENCE

1. Variable power cooking control (Touch Control Models)

The coil of power relay B (RY1) is energized intermittently by the digital programmer circuit, when the oven is set at any power selection except for High power position. The digital programmer circuit controls the ON-OFF time of power relay B contacts in order to vary the output power of the microwave oven from "Warm" to "High" power. One complete ON and OFF cycle of power relay B is 22 seconds.
The relation between indications on the control panel and the output of the microwave oven is as shown in table.

NOTE: The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required for heating of magnetron filament.

2. Cyclic defrost (Touch Control Models)

When defrost power and defrosting time is selected and Start pad is touched:

(A) The digital programmer circuit (DPC) divides the total defrosting time into 8 equal periods, consisting of four defrosting periods, each followed by a standing period.

(B) During defrosting power periods, power relay B is energized for 9 seconds and de-energized for 13 seconds by DPC.

(C) During Standing periods, power relay B is always open resulting in no microwave power.

NOTE: Defrost time selected is converted into seconds by the DPC but display will show selected time in minutes and seconds as programmed. The total number of seconds is divided into 8 time periods. The remainder (seconds not equally divisible by 8) are added to the last standing time period.

Example: If Defrosting time is selected for 5 minutes, each operating period will be as follows :
5 minutes = 300 seconds
300/8 = 37 and remainder is 4 seconds.
The 4 seconds is added to the last time period.

NOTE: When defrosting time is selected for not more than 7 seconds, the power relay B will not be energized at all.

3. Auto weight defrost, Auto reheat, Auto weight cook control

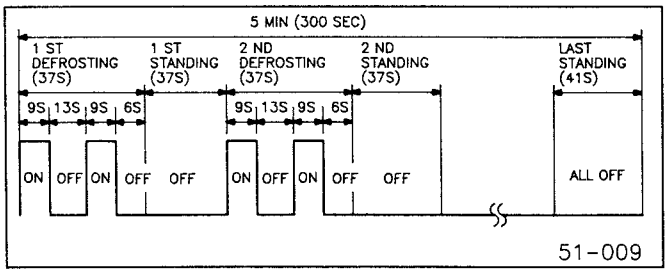
When those Auto Control feature is selected and the Start Pad is tapped:

(A) The digital programmer circuit determines the power level and cooking time to complete cooking and indicates the operating state in the display window.
Table shows the corresponding cooking times for respective serving by categories.

(B) When cooking time in the display window has elapsed, the oven turns off automatically by a controll signal from the digital programmer circuit.

Touch Control Models

POWER SETTING	OUTPUT POWER(W) APPROX.	ON-OFF TIME OF POWER RELAY B (RY1)	
		ON(SEC)	OFF(SEC)
HIGH	700	22	0
MEDIUM	490	17	5
M.LOW	360	13	9
LOW	200	8	14
WARM	70	4	18
CYCLIC DEFROST	APPROX. 110W	Please refer to description of cyclic defrost	



Auto Weight Defrost

WEIGHT SELECTED	TOTAL DEFROSTING TIME
1 LB	12 min. 00 sec.
3 LB	36 min. 00 sec.

Auto Reheat

CATEGORY / SERVING	1 PASTRY	2 MEAT
2	25 sec.	2 min. 30 sec.
4	50 sec.	4 min. 00 sec.

Auto Weight Cook (NN-7509)

WEIGHT SELECTED	COOKING TIME		
	CATEGORY 1	CATEGORY 2	CATEGORY 3
1 LB	12 min. 00 sec.	15 min. 20 sec.	19 min. 20 sec.
3 LB	36 min. 00 sec.	46 min. 00 sec.	58 min. 00 sec.

Auto Weight Cook (NN-6509/6539/6549)

WEIGHT SELECTED	COOKING TIME		
	CATEGORY 1	CATEGORY 2	CATEGORY 3
1 LB	9 min. 40 sec.	11 min. 40 sec.	16 min. 40 sec.
3 LB	29 min. 00 sec.	35 min. 00 sec.	50 min. 00 sec.

4. Auto sensor cooking

Auto sensor cooking is a revolutionary way to cook by microwave without setting a power level or selecting a time.
All that is necessary is to select an Auto Sensor Program before starting to cook.

Understanding Auto Sensor Cooking

As a food cooks, a certain amount of steam is produced. If the food is covered, this steam builds up and eventually escapes from the container. In Auto Sensor Cooking, a carefully designed instrument, called the humidity sensor element, senses this escape of steam. Then, based upon the Auto Sensor Program selected, the unit will automatically determine the correct power level and the proper length of time it will take to cook the food.

NOTE: **Auto Sensor Cooking is successful with the foods and recipes found in the Auto Sensor Cooking Guide. Because of the vast differences in food composition, items not mentioned in the Cooking Guide should be prepared in the microwave oven using power select and time features. Please consult Variable Power Microwave Cookbook for procedures.**

Explanation of the Auto Sensor Cooking process

1) The shaded columns in Figure indicate when the humidity sensor heater is on.
2) During the first 30 second period there is no microwave activity, and when calculating the T2 time by using the formula below make sure this 30 seconds is subtracted from the T1 time. In other words T1 time starts at the end of the 30 second period. (This 30 second period is needed for the sensor element to stabilize and balance itself to the humidity present before microwave activity starts.)
3) **T1 time**·····The total amount of time it takes the microwave oven to switch to T2 time after the 30 second period. During this time one of the Auto Sensor programs (A1-A8) will be shown in display.
4) **T2 time**·····When the steam escapes from the cooking container placed in the oven, the humidity sensor detects it and the microprocessor calculates the balance of cooking time. This T2 time is then shown in the display and begins counting down.

Balance of cooking time (T2 time)

The balance of cooking time which is called T2 time, can be calculated by the following formula.

T2 time (in sec.) =T1 time × K factor

NOTE: **Remember, the T1 time starts after the 30 second period. The coefficient K is programmed into the microprocessor memory and they are listed in the following tables along with the P1 and P2 powers.**

NOTE: **When "More" or "Less" pad is selected, the K factor varies resulting in T2 time to be increased or decreased.**

Example of calculating the T2 time

Example 1: If the T1 time is measured to be 2 minutes and 40 seconds after the 30 second period, and the Auto program selected is COOK A8:

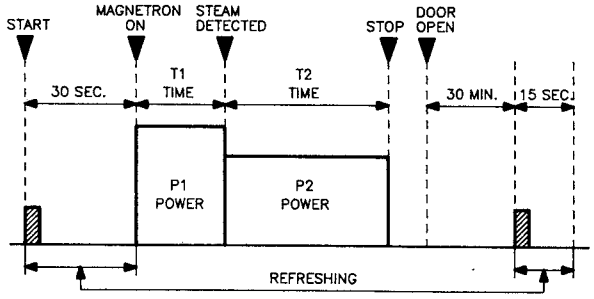
T2 = T1 × K
= 2 min. and 40 sec. × 0.1
= 160 sec. × 0.1
= 16 sec.

5. Auto Sensor Reheat

With Auto Sensor Reheat, you can accurately reheat foods in accordance with their current state of preparation. This allows you to set the oven to reheat either: 1) Room temperature foods, 2) Refrigerated foods and 3) Frozen foods at their appropriate power levels and times. Best of all, Auto Sensor automatically does it all at the touch of a button!

NOTE: **The Auto Sensor Reheat process is same as Auto Sensor Cooking process.**

AUTO SENSOR COOKING/REHEAT PROCESS



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Auto Sensor Cook (NN-7809)

	P1 Power	P2 Power	K factor Standard
A1	MED	M.LOW	1.6
A8	HIGH	WARM	0.1

Auto Sensor Cook (NN-6809/6859/6849)

	P1 Power	P2 Power	K factor Standard
A1	MED	M.LOW	1.1
A8	HIGH	WARM	0.1

Auto Sensor Reheat (NN-7809/6809/6849/6859)

Category	P1 Power	P2 Power	K factor
1. Room Temp Foods	High	Warm	0.1

CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

CAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

1. Check the grounding

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

2. Warning about the electric charge in the high voltage capacitor

For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitor.
When replacing or checking parts, remove the power plug from the outlet and short the terminal of the high voltage capacitor (terminal of lead wire from diode) to chassis ground with an insulated handle screwdriver to discharge.

WARNING

There is high-voltage present, with high-current capabilities in the circuits of the high voltage winding and filament winding of the high voltage transformer. It is extremely dangerous to work on or near these circuits with oven energized.
DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

WARNING

Never touch any circuit wiring with your hand nor with an insulated tool during operation.

3. When parts must be replaced, remove the power plug from the outlet.

4. When the 15 Amp fuse is blown due to the operation of short switch:

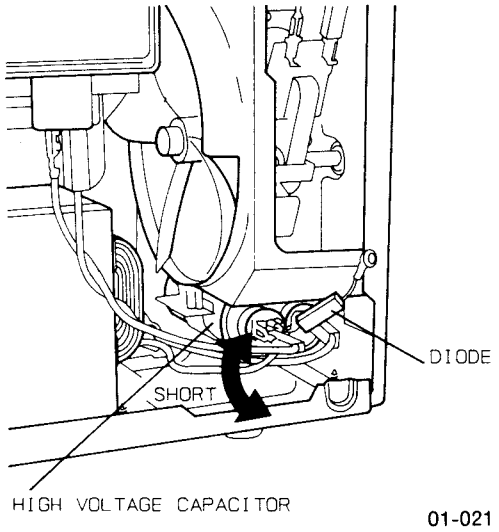
WARNING

When the 15 Amp. fuse is blown due to the operation of short switch, you must replace Primary latch switch and short switch. For U.S.A. models, also replace power relay B (RY1) when the continuity check reads shorted contacts (1-2).

(A) This is mandatory. Refer to "Adjustments and Measurement" for these switches.
(B) When replacing the fuse, confirm that it has the appropriate rating for these models.
(C) When replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.

5. Avoid inserting nails, wire, etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.



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Touch chassis side first then short to the high voltage capacitor terminal.

6. Confirm after repair

(A) After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing.
Microwaves might leak if screws are not properly tightened.
(B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
(C) Check for microwave energy leakage. (Refer to procedure for measuring microwave energy leakage.)

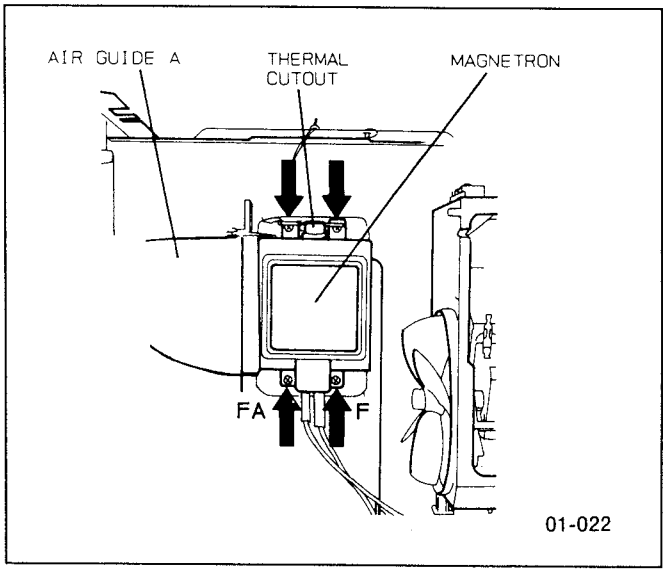
DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

1. Magnetron

(A) Discharge the high voltage capacitor.
(B) Remove 2 screws holding magnetron thermal cutout.
(C) Remove 1 screw holding air guide A.
(D) Disconnect 2 high voltage lead wires from magnetron filament terminals.
(E) Remove 4 screws holding the magnetron.
NOTE: After replacement of the magnetron, tighten mounting screws properly making sure there is no gap between the waveguide and the magnetron to prevent microwave leakage.

CAUTION
When replacing the magnetron, be sure the antenna gasket is in place.

CAUTION
When connecting 2 filament lead wires to the magnetron terminals, be sure to connect the lead wires in the correct position. The lead wire of high voltage transformer should be connected to "F terminal" and the lead wire from high voltage capacitor should be connected to "FA terminal".

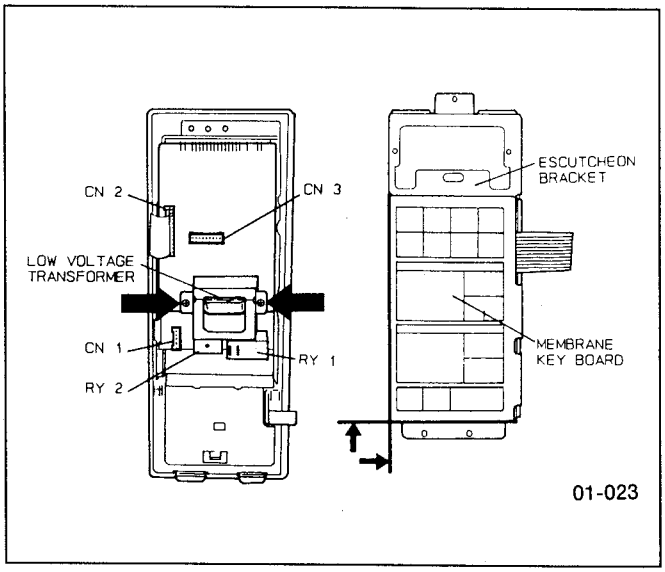


2. Digital programmer circuit (DPC) and membrane key board.

NOTE: Be sure to ground any static electric charge built up on your body, before handling the DPC.
(A) Disconnect all connectors from D.P.C.
(B) Remove 1 screw holding escutcheon base and slide the escutcheon base upward slightly.
(C) Release CN2 connector's lock of DPC by pushing both levers to inside and pull them upward, and remove flat cable of membrane key board.
(D) Remove 2 screws holding DPC.

To replace membrane key board

(E) Remove escutcheon bracket from escutcheon base by freeing 4 catch hooks on the escutcheon base.
(F) Remove 1 screw holding membrane key board's tab and peel off the membrane key board from the escutcheon base.
NOTE: 1. The membrane key board is attached to the escutcheon bracket with double faced adhesive tape.
2. When installing new membrane key board, make sure that the surface of escutcheon bracket is cleaned sufficiently so that any problems (shorted contacts or uneven surface) can be avoided.
3. Make sure that new membrane key board is aligned to the left and lower edges of the escutcheon bracket.

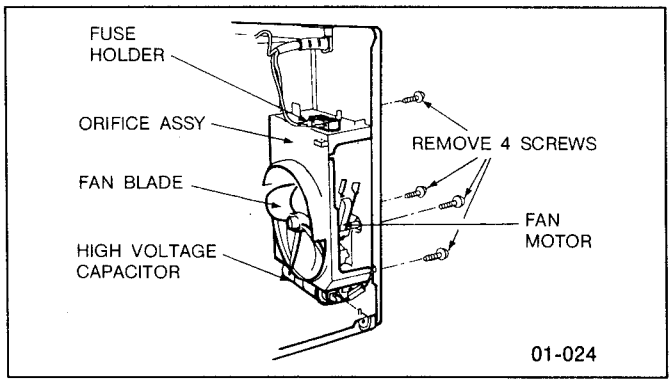


3. Low voltage transformer and/or power relays (RY1, RY2)

NOTE: Be sure to ground any static electric charge built up on your body before handling the DPC.
(A) Using solder wick or a desoldering tool and 30W soldering iron, carefully remove all solder from the terminal pins of the low voltage transformer and/or power relays.
NOTE: Do not use a soldering iron or desoldering tool of more than 30 watts on DPC contacts.
(B) With all the terminal pins cleaned and separated from DPC contacts, remove the defective transformer/power relays and install new transformer/power relays making sure all terminal pins are inserted completely. Resolder all terminal contacts carefully.

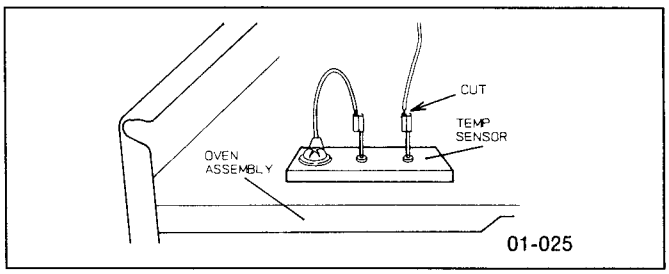
4. Fan motor.

(A) Disconnect 2 lead wires from fan motor terminals.
(B) Disconnect 2 lead wires from fuse holder terminals.
(C) Disconnect 4 high voltage lead wires from high voltage capacitor terminals.
(D) Remove 4 screws holding fan motor and orifice assy and detach the orifice assy with fan motor from oven assy.
(E) Remove fan blade from the fan motor shaft by pulling it straight out.
(F) Separate the fan motor from the orifice assy by freeing 2 catch hooks on the orifice assy.



5. Temp sensor (thermal protector)

(A) Cut 2 lead wires at the top of sensor terminals.
(B) Remove 1 screw holding the temp sensor and replace with new one.
(C) Solder the lead wires securely to the sensor terminals.

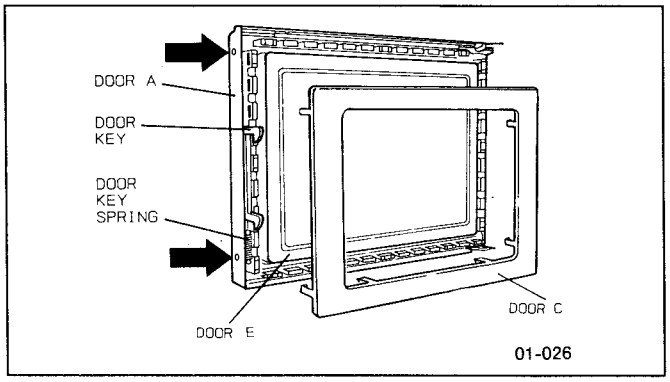


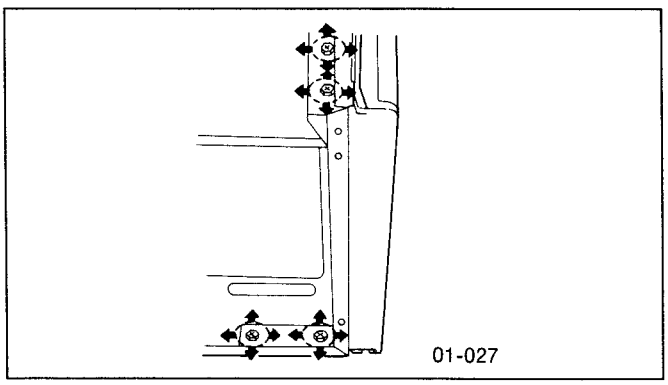
6. Door assembly

(A) Open the door and remove door C from door E by carefully pulling outward starting from upper right hand corner.
(B) Remove door key and door key spring.
(C) Remove 3 screws holding side and bottom frames of door A.
(D) Separate the door A from the door E by freeing 6 catch hooks on the door A using a flat screwdriver.

After replacement of the defective component parts of the door, reassemble it and follow the instructions below for proper installation and adjustment so as to prevent an excessive microwave leakage.

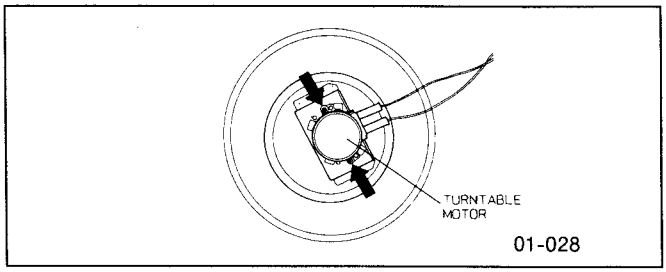
(1) When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment.
(2) Adjust so that the door has no play between the inner door surface and oven front surface. If the door assembly is not mounted properly, microwave may leak from the clearance between the door and oven.
(3) Perform the microwave leakage test.





7. Turntable motor.

(A) Remove 2 screws holding motor cover.
(B) Disconnect 2 lead wires from turntable motor.
(C) Remove 2 screws holding turntable motor.



COMPONENT TEST PROCEDURE

CAUTION

1. High voltage is present at the high voltage terminal of the high voltage transformer during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the high voltage capacitor.

1. Primary Latch Switch, Secondary (Secondary Latch Switch and Power relay B) Interlocks.

(A) Unplug lead connectors to Power Relay B and verify continuity of the power relay B 1-2 terminals.
(B) Unplug lead connectors to Primary Latch Switch and Secondary Latch Switch.
(C) Test the continuity of switches at door opened and closed positions with ohm meter (low scale).
Normal continuity readings should be as follows.

	Door Opened	Door Closed
Primary Latch Switch	∞ Ω (open)	0 Ω (close)
Secondary Latch Switch	∞ Ω (open)	0 Ω (close)
Power Relay B	∞ Ω (open)	∞ Ω (open)

2. Short Switch & Monitor Circuit

(A) Unplug lead wires from H.V. transformer primary terminals.
(B) Connect test probes of ohm meter to the disconnected leads which were connected to H.V. Transformer.
(C) Test the continuity of short switch with door opened and closed positions using lowest scale of the ohm meter.
Normal continuity readings should be as follows.

Models	Door closed	Door opened
Touch Models	∞ Ω	0 Ω
Mechanical Models	Some Ohm See Note	0 Ω

NOTE: In this case, the ohm meter indicates some resistance of the part(s) such as oven lamp, blower fan motor, etc. connected in parallel with the monitor circuit.

3. High voltage transformer

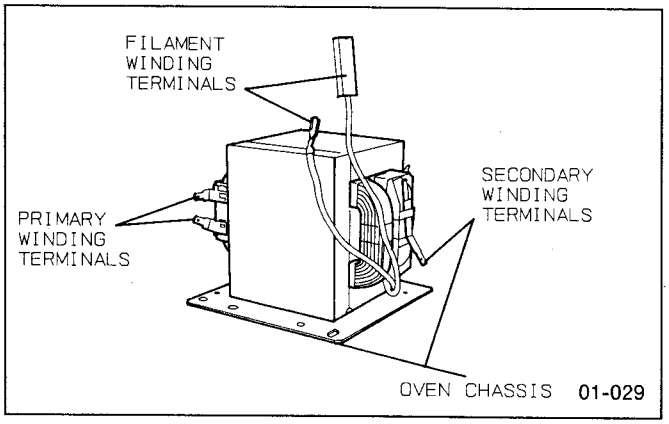
(A) Remove connections from the transformer terminals and check continuity.
(B) Normal (cold) resistance readings should be as follows:
Secondary winding ..... Approx. 80Ω~120Ω
Filament winding ..... Approx. 0Ω
Primary winding ..... Approx. 0Ω~ 1Ω

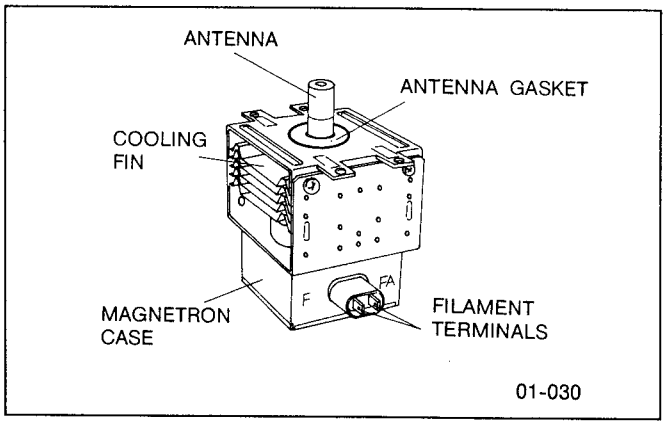
4. High voltage capacitor

(A) Check continuity of capacitor with meter on highest OHM scale.
(B) A normal capacitor will show continuity for a short time, and then indicate 9MΩ once the capacitor is charged.
(C) A shorted capacitor will show continuous continuity.
(D) An open capacitor will show constant 9MΩ.
(E) Resistance between each terminal and chassis should be infinite.

5. Magnetron

Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron.
(A) Isolate magnetron from the circuit by disconnecting the leads.
(B) A continuity check across magnetron filament terminals should indicate one ohm or less.
(C) A continuity check between each filament terminal and magnetron case should read open.





6. Diode

(A) Isolate the diode from the circuit by disconnecting the leads.
(B) With the ohmmeter set on the highest resistance scale, measure the resistance across the diode terminals. Reverse the meter leads and again observe the resistance reading. Meter with 6V, 9V or higher voltage batteries should be used to check the front-to-back resistance of the diode, otherwise an infinite resistance may be read in both directions.
A normal diode's resistance will be infinite in one direction and several hundred kΩ in the other direction.

7. Membrane key board (Membrane switch assembly)

Check continuity between switch terminals, by tapping an appropriate pad on the key board. The contacts assignment of the respective pads on the key board is as shown in digital programmer circuit.

8. Humidity Sensor and digital programmer circuit

CAUTION

Do not touch any parts of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel.
Always ground yourself while working on this panel to discharge any static charge built up on your body.

(A) Check across sensor heater terminals. Normal cold resistance should read approx. 4.5 ohm.
(B) In order to determine if the Auto Sensor function of the digital programmer circuit is in working order or not, do the following test.
1) Place a water load in the oven.
2) Unsolder 2 red wires connected to sensor terminals.
3) Tap Auto Sensor COOK Pad 8 times to set auto sensor cooking at A8 and tap Start Pad.
4) About 10 seconds after Start Pad is touched, short 2 red wires for 5 seconds and then remove them. Before shorting the 2 red wires you can watch the sensor heater glow red.
5) The oven lamp will dim a little, about 30 seconds after the Start Pad is tapped. This indicates that magnetron has started oscillation.
6) After approx. *15 seconds (T1 TIME), short the 2 red wires again.
7) A8 should disappear in display window and following digits (see chart) should appear indicating **balance of cooking time (T2 TIME). The time should start to count down and oven should shut off when the time has elapsed.

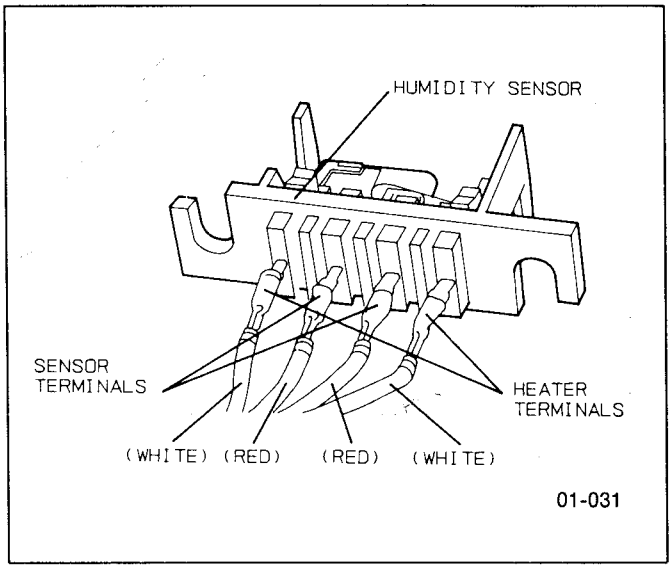
* T1 TIME	** T2 TIME (balance of cooking time)
10 sec.~19 sec.	1 sec.
20 sec.~29 sec.	2 sec.

The Auto Sensor function in the digital programmer circuit is working in order if above condition is obtained.

9. Temp sensor (Thermal protector)

A temp sensor is mounted or top of the oven cavity at the left side. Its purpose is to automatically shut off the oven in case the cavity overheats for any reason.
The thermal protector will operate at 257°F (125°C).
The device is connected to the DPC on touch control models. When the thermal protector exceeds its temperature it will turn off the power to oven cavity and display wil go to reset mode.
The cooking program can be reset after cool-down.

THERMISTOR RESISTANCE VALUE
30K-120K at 10°C-30°C (50°F-86°F)



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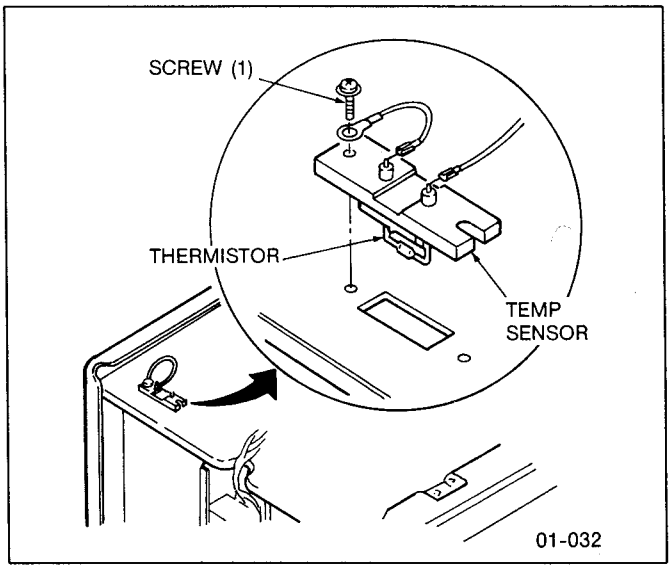

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MEASUREMENTS AND ADJUSTMENTS

WARNING

* For continued protection against radiation hazard, replace only with identical replacement parts (For touch models Part No. ANE61424L0AG, Type No. V-16G-3C26 for Primary latch switch Part No. A61424650AP, Type No. L-3C2-MR for Secondary latch switch and Part No. ANE6178-5R0, Type No. L-2C2-MR for short switch.)
* When the 15 Amp. fuse is blown due to the operation of short switch, you must replace Primary latch switch and short switch. For U.S.A. models, also replace power relay B (Part No. AEG5J1EG12, Type No. G5J-1-TP) when the continuity check reads shorted contacts (1 — 2). Then follow the adjustment procedures below.
* Interlock switch replacement — In replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.
* Refer to schematic diagram to ensure proper connection.

1. Adjustment of Primary latch switch, Secondary latch switch and short switch

(A) When mounting Primary latch switch, Secondary latch switch and short switch to door hook assembly, mount the Primary latch switch, the Secondary latch switch and the short switch to the door hook assembly as shown in table.

NOTE: **No specific adjustment during installation of Primary latch switch, Secondary latch switch and short switch to the door hook is necessary.**

(B) When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of arrow in table so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.

(C) Reconnect the short switch and check the continuity of the monitor circuit and all latch switches again by following the components test procedures.

2. Measurement of microwave output

The power output of the magnetron can be determined by performing a simple water heating test as described below.

Necessary Equipment:

*Two 1 liter beakers *Glass thermometer

*Wrist watch or stopwatch

NOTE: **Check the line voltage under load. Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurate as possible.**

(A) Fill each beaker with exactly one liter of tap water. Stir the water using the thermometer and record each beaker's temperature (recorded as T1A and T1B).

(B) Place both beakers on the center of glass cook plate.
Set the oven for High power and heat it for exactly two minutes.

(C) Stir the water again and read the temperature of each beaker (recorded as T2A and T2B).

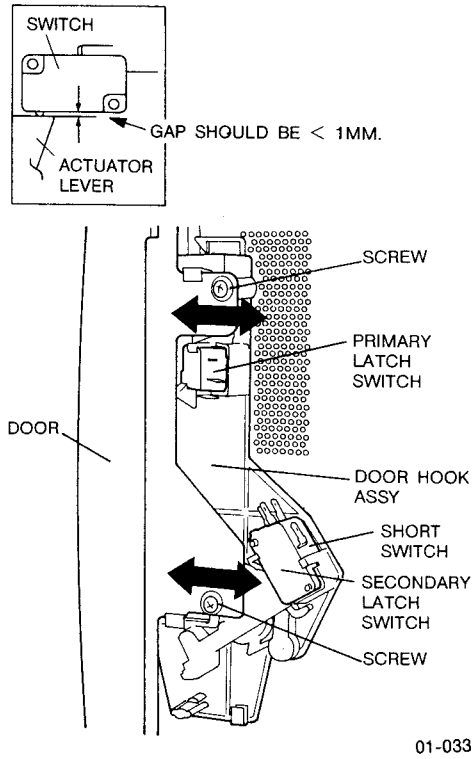
(D) Obtain the temperature rise by using the following formula:

$$\text{Average temperature rise} = \frac{(T2A + T2B) - (T1A + T1B)}{2}$$

(E) The normal temperature rise at High power position for each models is as shown in table A.

(F) To obtain the power output, multiply the average temperature rise by 39 (or 70 if thermometer is in Celsius).
Example:
If you find average temperature rise of 18°F the ovens output is 18 × 39 = 702 watts.

NOTE: **This test may be conducted by heating one liter of water for one minute if only one beaker is available. In this instance you will find the temperature rise being smaller than the above specifications due to the microwave absorption characteristic. You may judge the magnetron to be normal when the temperature rise is greater than temperature rise shown in table B.**



Please confirm that the gap between the switch housing and switch actuator levers is no more than 1.0mm when the door is closed.

TABLE A (2 ℓ -2min. test)

RATED OUTPUT	TEMPERATURE RISE
500W	11.5—14.7°F (6.4—8.2°C)
600W	13.8—17.8°F (7.7—9.9°C)
700W	16.0—20.0°F (8.9—11°C)

TABLE B (1 ℓ -1min. test)

RATED OUTPUT	TEMPERATURE RISE
500W	Min. 9.7°F (5.4°C)
600W	Min. 11.5°F (6.5°C)
700W	Min. 13.5°F (7.5°C)

PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE

WARNING

Check for radiation leakage after every servicing. Should the leakage be more than 2 mW/cm² (1mW/cm² for Canada) inform the MSC, PHI, PSC, or MELCA immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S and NHW regulation. This required must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

NOTE: The U.S. government standard is 5 mW/cm² while in the customer's home. 2mW/cm² stated here is our own voluntary standard. (1mW/cm² for Canada)

1. Equipment

*Electromagnetic radiation monitor
*Glass thermometer 212°F or 100°C
*600cc glass beaker

2. Procedure for measuring radiation leakage.

Note before measuring

(1) Do not exceed meter full scale deflection. Leakage monitor should initially be set to the highest scale.
(2) To prevent false readings the test probe should be held by the grip portion of the handle only and moved along the shaded area shown in Figure no faster than 1 inch/sec (2.5 cm/sec)
(3) Leakage with the outer panel removed·····less than 5mW/cm²
(4) Leakage for a fully assembled oven with door normally closed····· less than 2mW/cm² (1mW/cm² for Canada)
(5) Leakage for a fully assembled oven [Before the latch switch (primary) is interrupted] while pulling the door ····· less than 2mW/cm²

(A) Pour 275 ± 15cc (9ozs ± 1/2oz) of 20 ±5°C (68 ± 9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.
(B) Set the radiation monitor to 2450MHz and use it following the manufacturer's recommended test procedure to assure correct results.
(C) When measuring the leakage, always use the 2 inch (5cm) spacer supplied with the probe.
(D) Tap the start pad or set the timer and with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

(1) Measurement with the outer panel removed.

Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measuring around the magnetron.

WARNING

Avoid contacting any high voltage parts.

(2) Measurements with a fully assembled oven.

After all components, including the outer panel are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening and air inlet openings.

3. Record keeping and notification after measurement

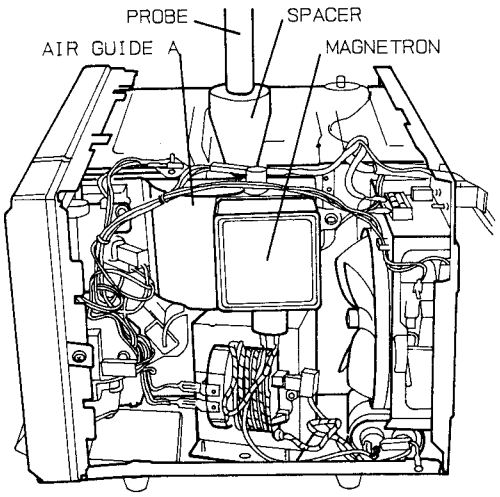
(A) After any adjustment or repair to a microwave oven, a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.
A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.

(B) Should the radiation leakage be more than 2 mW/cm² (1mW/cm² for Canada) after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify the MSC, PHI, PSC or MELCA.

4. At least once a year, have the radiation monitor checked for calibration by its manufacturer.

WARNING

AVOID CONTACTING ANY HIGH VOLTAGE PARTS.



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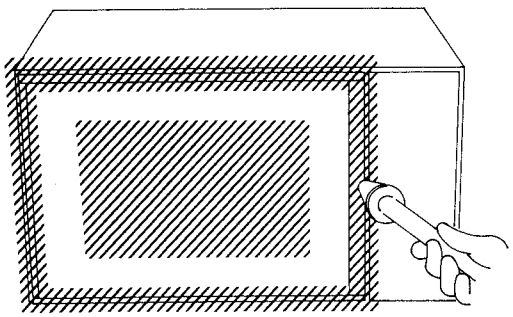


01-035

MOVE PROBE ALONG SHADED AREA (////) AROUND EXHAUST OPENINGS (as shown) AND AROUND AIR INLET OPENING

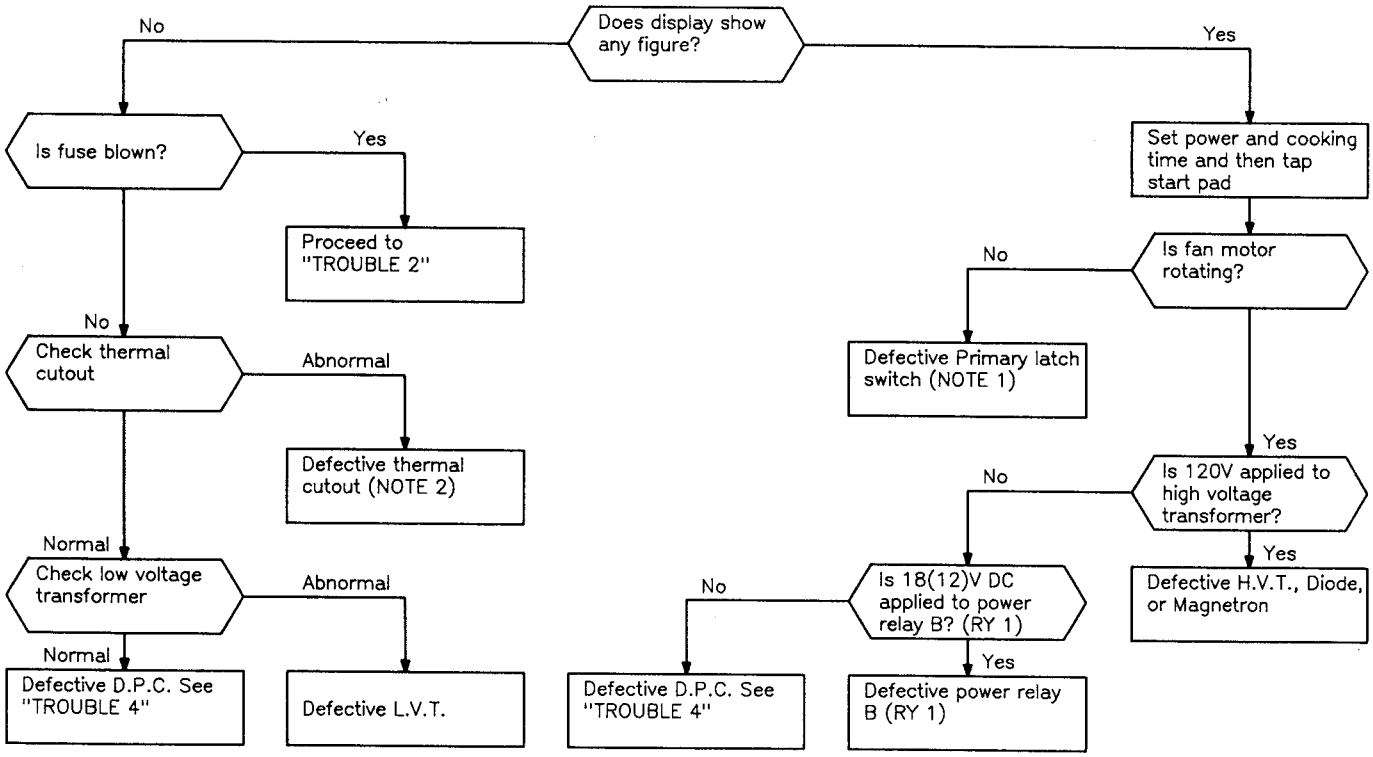
TROUBLESHOOTING GUIDE

CAUTION

1. Check grounding before checking for trouble.
2. Be careful of the high voltage circuit.
3. Discharge high voltage capacitor.
4. When checking the continuity of the switches or the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
   When disconnecting a plastic connector from a terminal, you must hold the plastic connector instead of the lead wire and then disconnect it, otherwise lead wire may be open or the connector cannot by removed.
5. Do not touch any parts of the circuitry on the digital programmer circuit, since static electric discharge may damage this control panel.
   Always touch yourself to ground while working on this panel to discharge any static charge in your body.
6. A 120V AC is present at the shaded area ▩ of the digital programmer circuit (Terminals of power relay B and primary circuit of low voltage transformer). When troubleshooting, be cautious of possible electrical shock hazard.

First of all operate the microwave oven following the correct operating procedures in order to find the exact cause of any trouble.

【TROUBLE 1】 Oven does not start cooking



NOTE 1: See "Component Test Procedure" and "Measurements and Adjustments" on previous pages.
NOTE 2: Check fan motor when thermal cutout is defective.

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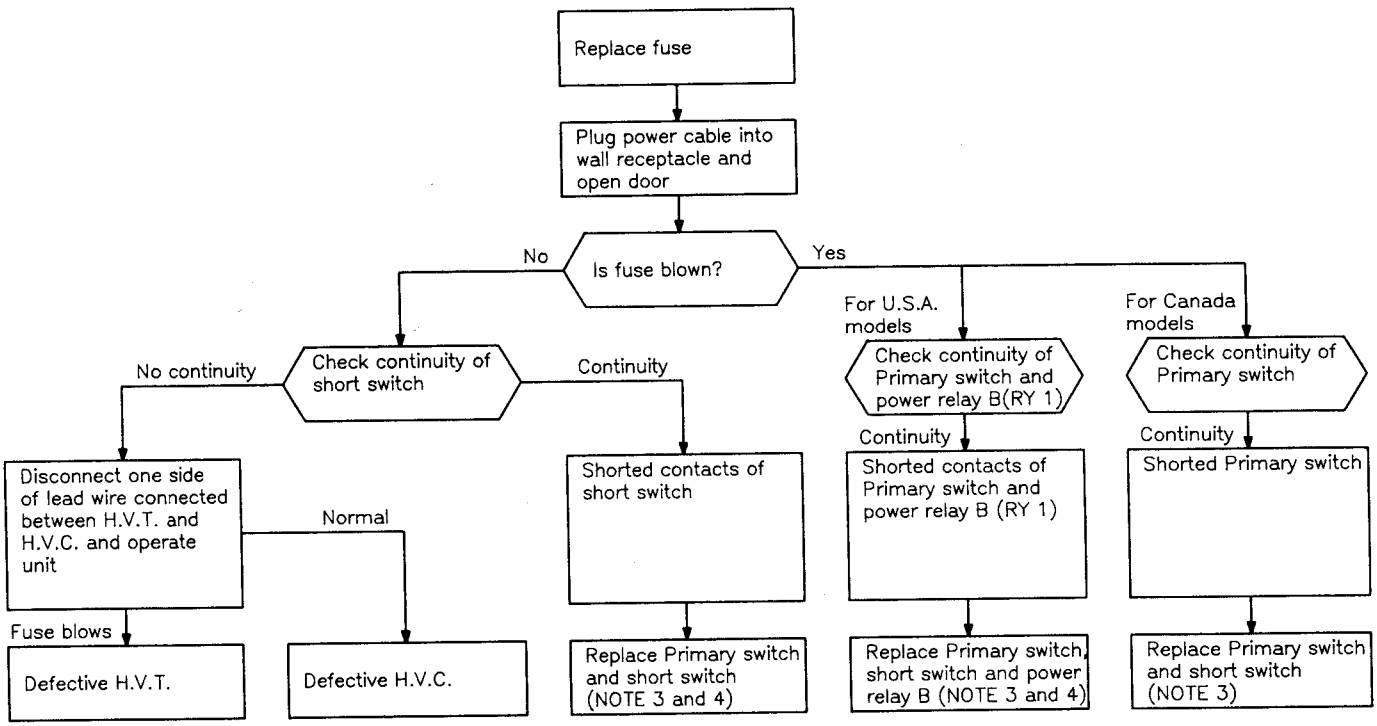
【TROUBLE 2】 Fuse is blown.


Replace fuse
Plug power cable into wall receptacle and open door
Is fuse blown?
No
Yes
For U.S.A. models
For Canada models
Check continuity of short switch
No continuity
Continuity
Check continuity of Primary switch and power relay B(RY 1)
Check continuity of Primary switch
Continuity
Continuity
Disconnect one side of lead wire connected between H.V.T. and H.V.C. and operate unit
Normal
Shorted contacts of short switch
Shorted contacts of Primary switch and power relay B (RY 1)
Shorted Primary switch
Fuse blows
Defective H.V.T.
Defective H.V.C.
Replace Primary switch and short switch (NOTE 3 and 4)
Replace Primary switch, short switch and power relay B (NOTE 3 and 4)
Replace Primary switch and short switch (NOTE 3)

NOTE 3: All these switches must be replaced at same time.
(Refer to adjustment instructions.)
NOTE 4: Check continuity of power relay B's contacts (between 1 and 2) and if it has continuity, replace power relay B too.

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TROUBLE 3 Other troubles

CONDITIONS	POSSIBLE CAUSE	NOTE
Microwave output power is low. First of all, check if output power is really low by following "Measurement of microwave output".	1. Decrease in power source voltage. 2. Aging change of magnetron.	
Oven lamp and fan motor turn on when door is open.	1. Shorted contacts of Primary latch switch.	For U.S.A. models only.
Oven lamp and fan motor turn on when power supply cord is plugged into wall receptacle.	1. Open Secondary latch switch. 2. Shorted contacts of power relay A. (RY2) 3. Defective digital programmer circuit. (See trouble 4)	
Microwave oven does not operate normally, when auto sensor cooking is selected.	1. Open or loose wiring of sensor terminals from DPC. 2. Defective humidity sensor. 3. Defective DPC. (See trouble 4)	

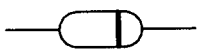
(TROUBLE 4) Trouble related to Digital programmer circuit for LCD display (without back light) models

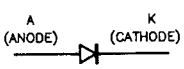
SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No display when oven is first plugged in.	1	Low voltage transformer (LVT) secondary voltage	Abnormal 0V	LVT
			Normal	→ Step 2
	2	IC-1 pin 37 voltage	Abnormal	ZD1,Q1
			Normal = 5V	→ Step 3
	3	IC-1 pin 23 voltage	Abnormal	IC-2
			Normal	→ Step 4
	4	IC-1 pin 29,30,31 voltage	Abnormal	R15,R16,R17
			Normal 3V,2V,1V	IC-1,CX1,LCD
No key input	1	Membrane switch continuity	Abnormal	Membrane switch
			Normal	IC-1
No beep sound	1	IC-1 pin 26 waveform	Abnormal	IC-1
			Normal	→ Step 2
	2	Q3 transistor	Abnormal	Q3
			Normal	BZ1
Power relay A does not turn on even though the program has been set and the start pad is tapped.	1	IC-1 pin 16 voltage at operation	Abnormal	IC-1
			Normal 0V	→ Step 2
	2	Short circuit between pin 1 and 12 of IC-2	Still not turn on	RY-2
			Turns on now	IC-2, Q4
No microwave oscillation at any power setting	1	IC-1 pin 14 and 15 voltages	Abnormal	IC-1
			Normal 14---1.7V 15---0V	Q2
Dark or unclear display	1	Replace LCD and check operation	Normal	LCD
			Abnormal	IC-1
Missing or lighting of unnecessary segment	1	Replace IC-1 and check operation	Normal	IC-1
			Abnormal	LCD
For LCD display (with back light) models				
No Display when oven is first plugged in	1	Low voltage transformer (LVT) secondary voltage	Abnormal 0V	LVT
			Normal	→ Step 2
	2	IC-1 pin 11 voltage (Emitter of Q1)	Abnormal	ZD1,Q1
			Normal = 5V	→ Step 3
	3	IC-1 pin 16 voltage (14 pin of IC-2)	Abnormal	IC-2
			Normal	→ Step 4
	4	IC-1 pin 48,49,50 voltage	Abnormal	R10,R11,R12
			Normal 3V,2V,1V	IC-1,CX1,CX2,LCD
	5	Voltage of A terminal of LED	Abnormal	IC-3,D8,C22,LED
			Normal = 12V	
No key input	1	Membrane switch continuity	Abnormal	Membrane switch
			Normal	IC-1

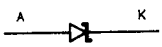
SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No beep sound	1	IC-1 pin 12 voltage	Abnormal	IC-1
			Normal	BZ1,Q8
Power relay A(RY-2) does not turn on even though the program has been set and the start pad is tapped	1	IC-1 pin 3 voltage while operation	Abnormal	IC-1
			Normal = 5V	→ Step 2
	2	short circuit between pin 1 and pin 12 of IC-2	Still not turn on	Ry-2
			RY-2 turns on	IC-2
No microwave oscillation at any power setting	1	IC-1 pin 2 and pin 58 voltages while operation at high power	Abnormal	IC-1
			Normal 2---5V, 58---5V	→ Step 2
	2	Q9 transistor	Abnormal	Q9
			Normal	IC-2, RY-1
Dark or unclear display	1	Replace LCD and check operation	Normal	LCD
			Abnormal	LC-1
Missing or lighting of unnecessary segment	1	Replace IC-1 and check operation	Normal	LC-1
			Abnormal	LCD
TO BE CONTINUED FOR AUTO SENSOR MODELS				
Oven stops it's operation 30 seconds after the start pad is tapped. Humidity sensor heater stay red glows for 30 sec.	1	Short circuit across the sensor terminals and check the operation	Oven operates continuously until cancel pad is tapped. Heater shut off by itself	Humidity sensor
			Still oven stops operation at 30 seconds.	C5, Q3, Q2, IC-1
Humidity sensor heater does not heat up at all	1	Heater terminals voltage	Normal AC 5-10V	Humidity sensor heater open
			No voltage	→ Step 2
	2	LVT voltage between S1 and S2	No voltage	LVT
			Normal AC 5~10V	D10 triac,IC-1, Q4, Q5

HOW TO CHECK THE SEMICONDUCTORS USING AN OHM METER

Diode







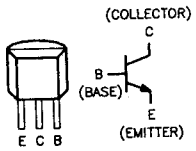
	FORWARD	REVERSE
A-K	SMALL	∞

Transistor

NPN Transistor

2SC·····

2SD·····

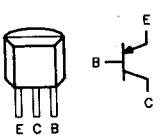


	FORWARD	REVERSE
B-E	SMALL	∞
B-C	SMALL	∞
C-E	∞	∞

PNP Transistor

2SA·····

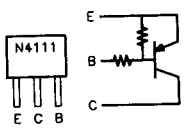
2SB·····



	FORWARD	REVERSE
E-B	SMALL	∞
C-B	SMALL	∞
C-E	∞	∞

Digital Transistor

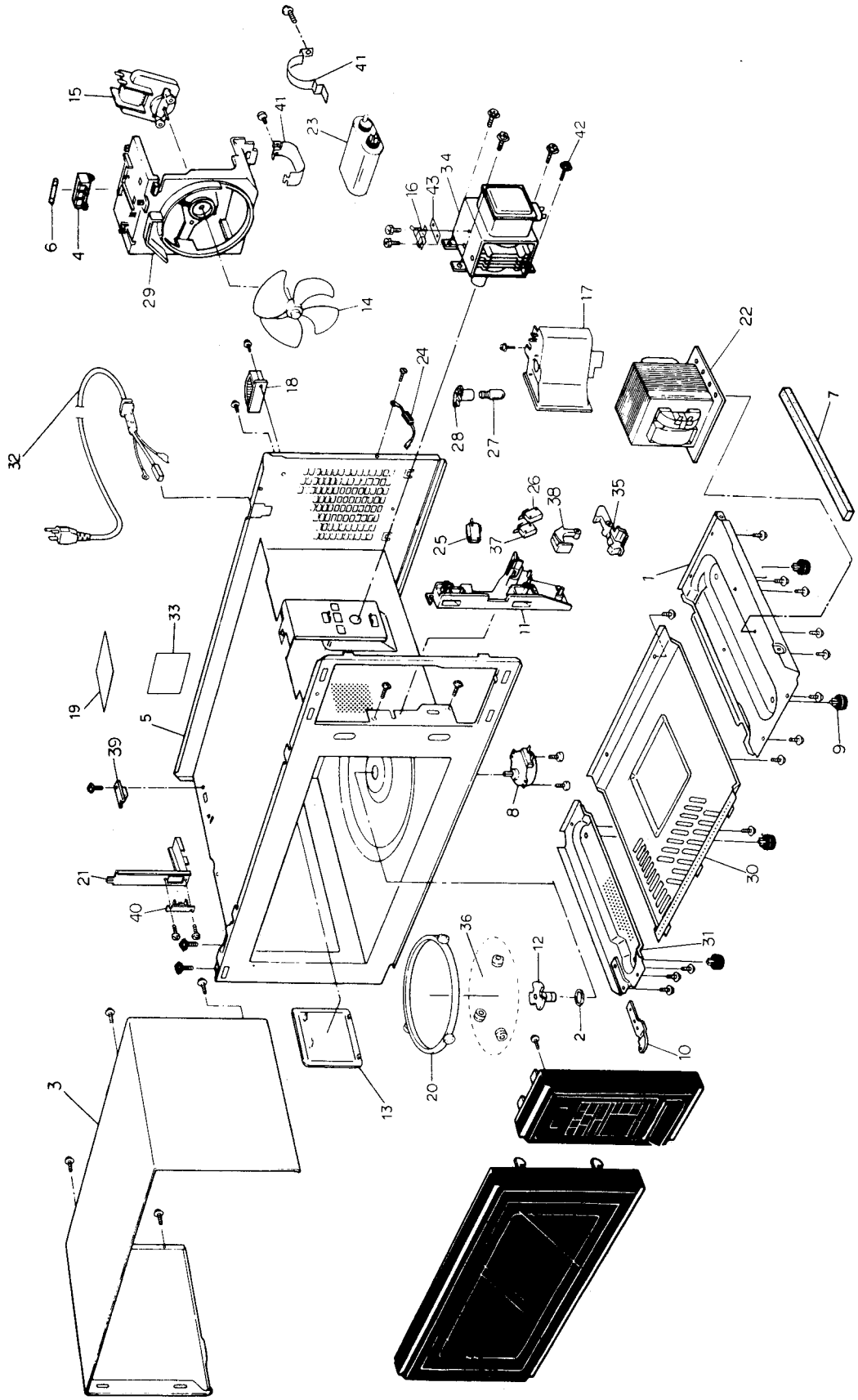
PNP Transistor



	FORWARD	REVERSE
E-B	10kΩ~30kΩ	10kΩ~30kΩ
C-B	50kΩ~90kΩ	∞
C-E	40kΩ~80kΩ	∞

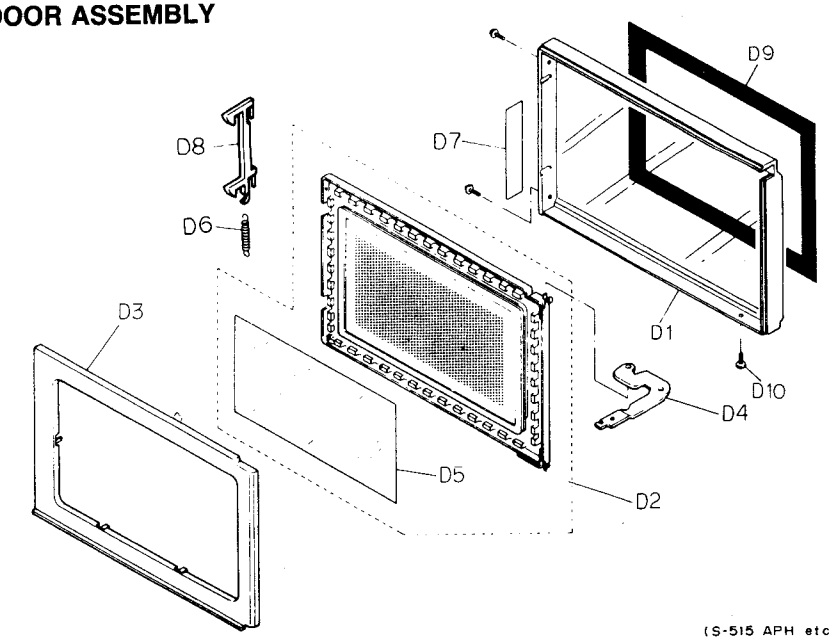
EXPLODED VIEW AND PARTS LIST

(S-515 APH etc)



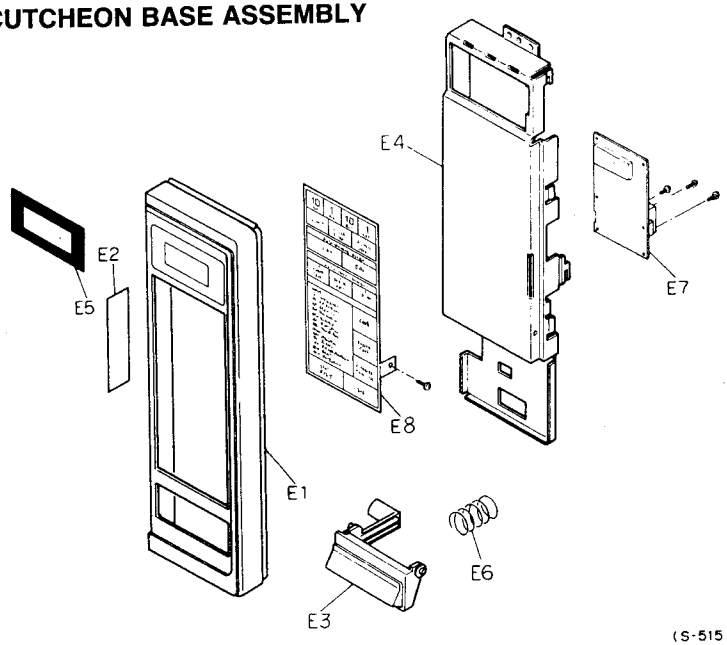
EXPLODED VIEW

DOOR ASSEMBLY



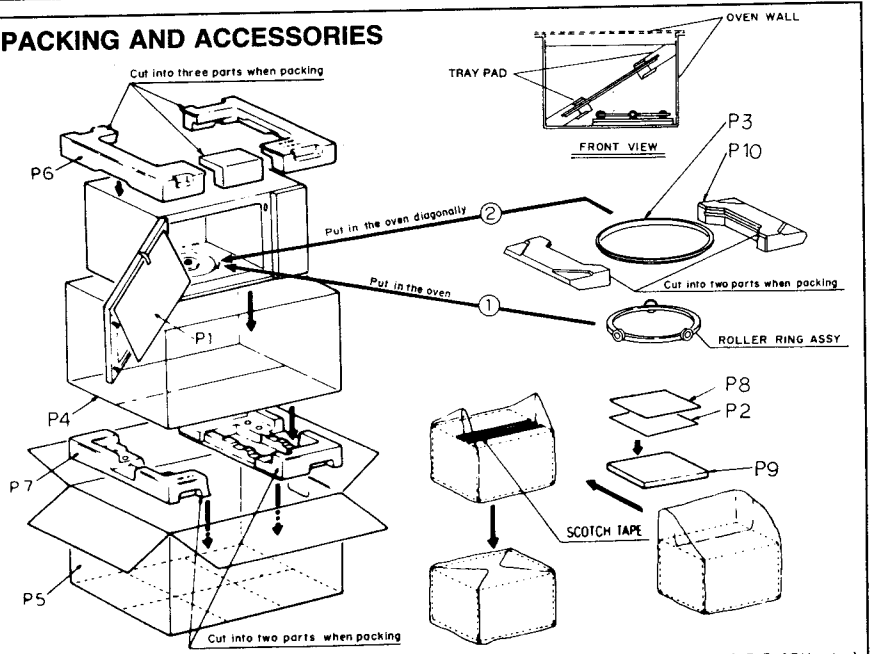
(S-515 APH etc)

ESCUTCHEON BASE ASSEMBLY



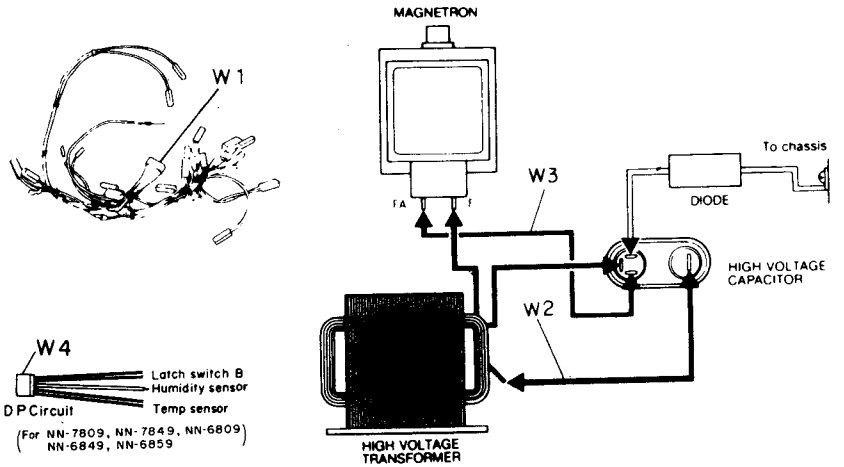
(S-515 APH etc)

PACKING AND ACCESSORIES



(S-515 APH etc)

WIRING MATERIAL



(S-515 APH etc)

PARTS LIST

NOTE 1: When ordering replacement part(s), please use part number(s) shown in this parts list.
Do not use description of the part.

2: Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

3: Alphabet marks in Remarks columns (i.e. APH, etc) indicate parts applicable to only specified country models as follows.
APH: For U.S.A. and some of Latin America countries, CPH: For Canada
Parts without these marks can be used for all models.

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
1		A10014650AP	Base	1	
2		ANE2177-F80	Washer	1	
3-1		A10095180AP	Cabinet body	1	NN-7369, NN-7409, NN-7509, NN-7809
3-2		A10094010HJJ	Cabinet body	1	NN-7449
3-3		A10095210AP	Cabinet body	1	NN-6309, NN-6369, NN-6409, NN-6469, NN-6479, NN-6509, NN-6539, NN-6809
3-4		A10094740HCP	Cabinet body	1	NN-6349, NN-6449, NN-6549, NN-6849, NN-6859
4		A62314000AP	Fuse holder	1	
5-1	⚠	A200A5150AP	Oven	1	NN-7369, NN-7409, NN-7449, NN-7509, NN-7809
5-2	⚠	A200A5210AP	Oven	1	NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549, NN-6809, NN-6849, NN-6859
6		A62304650AP	Fuse	1	250V, 15A
7		ANE000Z000AA	Cushion rubber A	1	
8		A63264080AP	Turntable motor	1	AC, 3W, Single
9		ANE1008-3W0	Rubber foot	4	
10	⚠	A30075180AP	Lower hinge	1	
11	⚠	A30204310AG	Door hook A	1	
12		A21315180AP	Pulley shaft	1	
13		A20554000AP	Cover A	1	
14		ANE40086W0AP	Fan	1	
15		A400A4010AP	Fan motor	1	AC, 24W, Single
16		A61454650AP	Thermal cutout	1	For Magnetron
17		A40254660AP	Air guide A	1	
18		ANE11408A0AG	Stopper A	1	
19		A00334650AP	Fuse label	1	
20		A290D5180AP	Roller ring assy	1	
21		A40244690AP	Exhaust guide A	1	NN-7809, NN-6809, NN-6849, NN-6859
22	⚠	A600B5180AP	H.V.Transformer	1	1.5KVA
23	⚠	A60904650AP	H.V.Capacitor	1	(0.951μF, AC2000V)
24	⚠	A62024000AP	Diode	1	Si, 0.35mA
25	⚠	ANE61424L0AG	Micro switch	1	Primary latch switch (V-16G-3C26)
26	⚠	A61424650AP	Micro switch	1	Secondary latch switch (L-3C2-MR)
27		ANE6030540AP	Incandescent lamp	1	125V, 20W
28		A61524000AP	Oven lamp socket	1	
29-1		A41444000AP	Orifice	1	NN-7369, NN-7409, NN-7449, NN-7509, NN-7809
29-2		A41444750AP	Orifice	1	NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549, NN-6809, NN-6849, NN-6849
30-1		A10264000AP	Base C	1	NN-7369, NN-7409, NN-7449, NN-7509, NN-7809
30-2		A10264740AP	Base C	1	NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549, NN-6809, NN-6849, NN-6849

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
31		A11294000AP	Base B	1	
32-1		A900C4650AP	AC cord W/plug	1	NN-7369, NN-7409, NN-7809 NN-7509 APH 125V
32-2		A900C4000CP	AC cord W/plug	1	NN-7449, NN-7509 CPH 125V
32-3		A900C4740AP	AC cord W/plug	1	NN-6309, NN-6369, NN-6409, NN-6469, NN-6479, NN-6539, NN-6509 APH, NN-6809 125V
32-4		A900C4060CQ	Power supply cord	1	NN-6349, NN-6449, NN-6549, NN-6509 CPH, NN-6849, NN-6859 125V
33-1		A00064650AP	Warning label	1	Except Canada
33-2		ANE0006R30CP	Warning label	1	Canada
34	⚠	2M210-M1C	Magnetron	1	
35		A31374650AP	Hook spacer B	1	
36		A202K5180AP	Roller B assy	1	NOTE 4
37	⚠	ANE6178-5R0	Switch	1	Short switch (L-2C2-MR)
38		A31384650AP	Hook spacer C	1	
39-1		A601L5180AP	Temp sensor	1	(Thermal protector) NN-7369, NN-7409, NN-7449, NN-7509, NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549
39-2		A601L5150AP	Temp sensor	1	(Thermal protector) NN-7809, NN-6809, NN-6849, NN-6859
40		A601L4780AP	Humidity sensor	1	NN-7809, NN-6809, NN-6849, NN-6859
41-1		A61884060AP	Capacitor bracket	1	NN-7369, NN-7409, NN-7449, NN-7509, NN-7809
41-2		A60374740AP	Capacitor bracket	1	NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549, NN-6809, NN-6849, NN-6859
42		XTWANE4+10RU	Tapping screw 4X10	4	For Magnetron
43		A62384650AP	Spacer	1	
		ANE0887L10AP	Cavity spray paint	1	Spray can, For repair of painted oven cavity
		ANE0887970AP	Touch-up paint	1	Bottle with brush, For repair of painted oven cavity

DOOR ASSEMBLY

D1-1	⚠	A30014650AP	Door A	1	NN-7369, NN-7409, NN-7449, NN-7509 NOTE 5
D1-2	⚠	A30015150AP	Door A	1	NN-7809 NOTE 5
D1-3	⚠	A30014740AP	Door A	1	NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549 NOTE 5
D1-4	⚠	A30014940AP	Door A	1	NN-6809, NN-6849 NOTE 5
D1-5	⚠	A30014780HCP	Door A	1	NN-6859 NOTE 5
D2-1	⚠	A301Q5180AP	Door E assy	1	NN-7369, NN-7409, NN-7449, NN-7509, NN-7809
D2-2	⚠	A301Q5240AP	Door E assy	1	NN-6309, NN-6349, NN-6369,

(S-515 APH)

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
					NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549, NN-6809, NN-6849
D2-3	⚠	A301Q5210HCP	Door E assy	1	NN-6859
D3-1	⚠	A30854000AP	Door C	1	NN-7369, NN-7409, NN-7449, NN-7509, NN-7809
D3-2	⚠	A30854740AP	Door C	1	NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469 NN-6479, NN-6509, NN-6539, NN-6549, NN-6809, NN-6849
D3-3	⚠	A30854780HCP	Door C	1	NN-6859
D4	⚠	A30064000AP	Upper hinge	1	
D5-1	⚠	A31455180AP	Door screen A	1	NN-7369, NN-7409, NN-7449, NN-7509, NN-7809
D5-2	⚠	A31455240AP	Door screen A	1	NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549, NN-6809, NN-6849, NN-6859
D6		A30214000AP	Door key spring	1	
D7-1		ANE0245X00AP	DHHS label	1	Except Canada
D7-2		ANE0411K20CP	CSA caution label	1	Canada
D8		A30184650AP	Door key A	1	
D9		A31465210HCP	Door screen B	1	NN-6859
D10		XTBANE3+8BZ	Tapping screw 3×8	3	For Door C

ESCUTCHEON BASE ASSEMBLY

E1-1		A80345180AP	Escutcheon base	1	NN-7369, NN-7409, NN-7449, NN-7509, NN-7809 NOTE 6
E1-2		A80345240AP	Escutcheon base	1	NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549, NN-6809, NN-6849 NOTE 6
E1-3		A80345210HCP	Escutcheon base	1	NN-6859 NOTE 6
E2-1		A00075200AP	Name plate	1	NN-7369
E2-2		A00075180AP	Name plate	1	NN-7409
E2-3		A00075170AP	Name plate	1	NN-7509 APH
E2-4		A00075150AP	Name plate	1	NN-7809
E2-5		A00075270AP	Name plate	1	NN-6309
E2-6		A00075260AP	Name plate	1	NN-6369
E2-7		A00075240AP	Name plate	1	NN-6409
E2-8		A00075230AP	Name plate	1	NN-6469
E2-9		A00075250AP	Name plate	1	NN-6479
E2-10		A00075220AP	Name plate	1	NN-6509 APH
E2-11		A00075400AP	Name plate	1	NN-6539
E2-12		A00075210AP	Name plate	1	NN-6809
E3-1		A80724650AP	Door opening button	1	NN-7369, NN-7409, NN-7449, NN-7509, NN-7809, NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549, NN-6809, NN-6849
E3-2		A80724780HCP	Door opening button	1	NN-6859
E4-1		A81275180AP	Bracket	1	NN-7369, NN-7409, NN-7449, NN-7509, NN-7809
E4-2		A81275240AP	Bracket	1	NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549, NN-6809, NN-6849, NN-6859
E5-1		A80015180AP	Escutcheon A	※1	NN-7369, NN-7409, NN-7449, NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479
E5-2		A80015150AP	Escutcheon A	1	NN-7509, NN-7809, NN-6509, NN-6539, NN-6549, NN-6809, NN-6849
E5-3		A80015210HCP	Escutcheon A	1	NN-6859
E6		ANE80378A0AG	Spring	1	
E7-1		A603L5250AP	D.P.Circuit assy	1	NN-7369, NN-6369, NN-6469, NN-6479 (W/Component)
E7-2		A603L5180AP	D.P.Circuit assy	1	NN-7409, NN-7449 (W/Component)
E7-3		A603L5170AP	D.P.Circuit assy	1	NN-7509 (W/Component)
E7-4		A603L5150AP	D.P.Circuit assy	1	NN-7809 (W/Component)
E7-5		A603L5240AP	D.P.Circuit assy	1	NN-6309, NN-6349, NN-6409, NN-6449 (W/Component)
E7-6		A603L5220AP	D.P.Circuit assy	1	NN-6509, NN-6539, NN-6549 (W/Component)
E7-7		A603L5210AP	D.P.Circuit assy	1	NN-6809, NN-6849, NN-6859 (W/Component)
E8-1		A64795200AP	Membrane switch	1	NN-7369
E8-2		A64794650AP	Membrane switch	1	NN-7409, NN-7449
E8-3		A64795170AP	Membrane switch	1	NN-7509
E8-4		A64795150AP	Membrane switch	1	NN-7809
E8-5		A64794810CP	Membrane switch	1	NN-6309, NN-6349
E8-6		A64794730AP	Membrane switch	1	NN-6369
E8-7		A64794740AP	Membrane switch	1	NN-6409, NN-6449
E8-8		A64795230AP	Membrane switch	1	NN-6469
E8-9		A64795250AP	Membrane switch	1	NN-6479
E8-10		A64795220AP	Membrane switch	1	NN-6509, NN-6549
E8-11		A64795400AP	Membrane switch	1	NN-6539
E8-12		A64794780AP	Membrane switch	1	NN-6809, NN-6849
E8-13		A64794780HCP	Membrane switch	1	NN-6859

PACKING AND ACCESSORIES

P1-1		ANE0107580AP	Door sheet	1	NN-7369, NN-7409, NN-7449, NN-7509, NN-7809
P1-2		ANE0107110AG	Door sheet	1	NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549, NN-6809, NN-6849, NN-6859
P2-1		A00035200AP	Instruction book	1	NN-7369, NN-6369, NN-6469, NN-6479
P2-2		A00035180AP	Instruction book	1	NN-7409, NN-7509 APH, NN-6309, NN-6409, NN-6539, NN-6509 APH
P2-3		A00035180CP	Instruction book	1	Canada
P3		A06014000AP	Glass cooking tray	1	
P4		ANE01068U0AP	Vinyl cover	1	
P5-1		A01025200AP	Packing case, paper	1	NN-7369
P5-2		A01025180AP	Packing case, paper	1	NN-7409
P5-3		A01025180HCP	Packing case, paper	1	NN-7449
P5-4		A01025170AP	Packing case, paper	1	NN-7509 APH
P5-5		A01025170CP	Packing case, paper	1	NN-7509 CPH
P5-6		A01025150AP	Packing case, paper	1	NN-7809
P5-7		A01025270AP	Packing case, paper	1	NN-6309
P5-8		A01025270HCP	Packing case, paper	1	NN-6349
P5-9		A01025260AP	Packing case, paper	1	NN-6369
P5-10		A01025240AP	Packing case, paper	1	NN-6409
P5-11		A01025240HCP	Packing case, paper	1	NN-6449
P5-12		A01025230AP	Packing case, paper	1	NN-6469
P5-13		A01025250AP	Packing case, paper	1	NN-6479
P5-14		A01025220AP	Packing case, paper	1	NN-6509 APH
P5-15		A01025220CP	Packing case, paper	1	NN-6509 CPH
P5-16		A01025400AP	Packing case, paper	1	NN-6539
P5-17		A01025220HCP	Packing case, paper	1	NN-6549
P5-18		A01025210AP	Packing case, paper	1	NN-6809
P5-19		A01025280HCP	Packing case, paper	1	NN-6849
P5-20		A01025210HCP	Packing case, paper	1	NN-6859
P6		A01044650AP	Upper filler	1	
P7		A01054650AP	Lower filler	1	
P8		ANE0169B60CP	Servicenter list	1	Canada
P9-1		A000B5150CP	Cook book	1	Canada

(S-515 APH)

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
P9-2		A000B5150AP	Cook book	1	NN-7809 APH, NN-6809
P10-1		A01134650AP	Tray styrol	1	NN-7369, NN-7409, NN-7449, NN-7509, NN-7809
P10-2		A01134740AP	Tray styrol	1	NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549, NN-6809, NN-6849, NN-6859
WIRING MATERIAL					
W1-1		A030A5150AP	Lead wire harness	1	Except Canada
W1-2		A030A5180CP	Lead wire harness	1	Canada
W2		A03504000AP	Lead wire	1	
W3		A03514000AP	Lead wire	1	NOTE 7
W4-1		A03535180AP	Lead wire	1	NN-7369, NN-7409, NN-7449, NN-7509, NN-6309, NN-6349, NN-6369, NN-6409, NN-6449, NN-6469, NN-6479, NN-6509, NN-6539, NN-6549
W4-2		A03535150AP	Lead wire	1	NN-7809, NN-7849, NN-6809, NN-6849, NN-6859

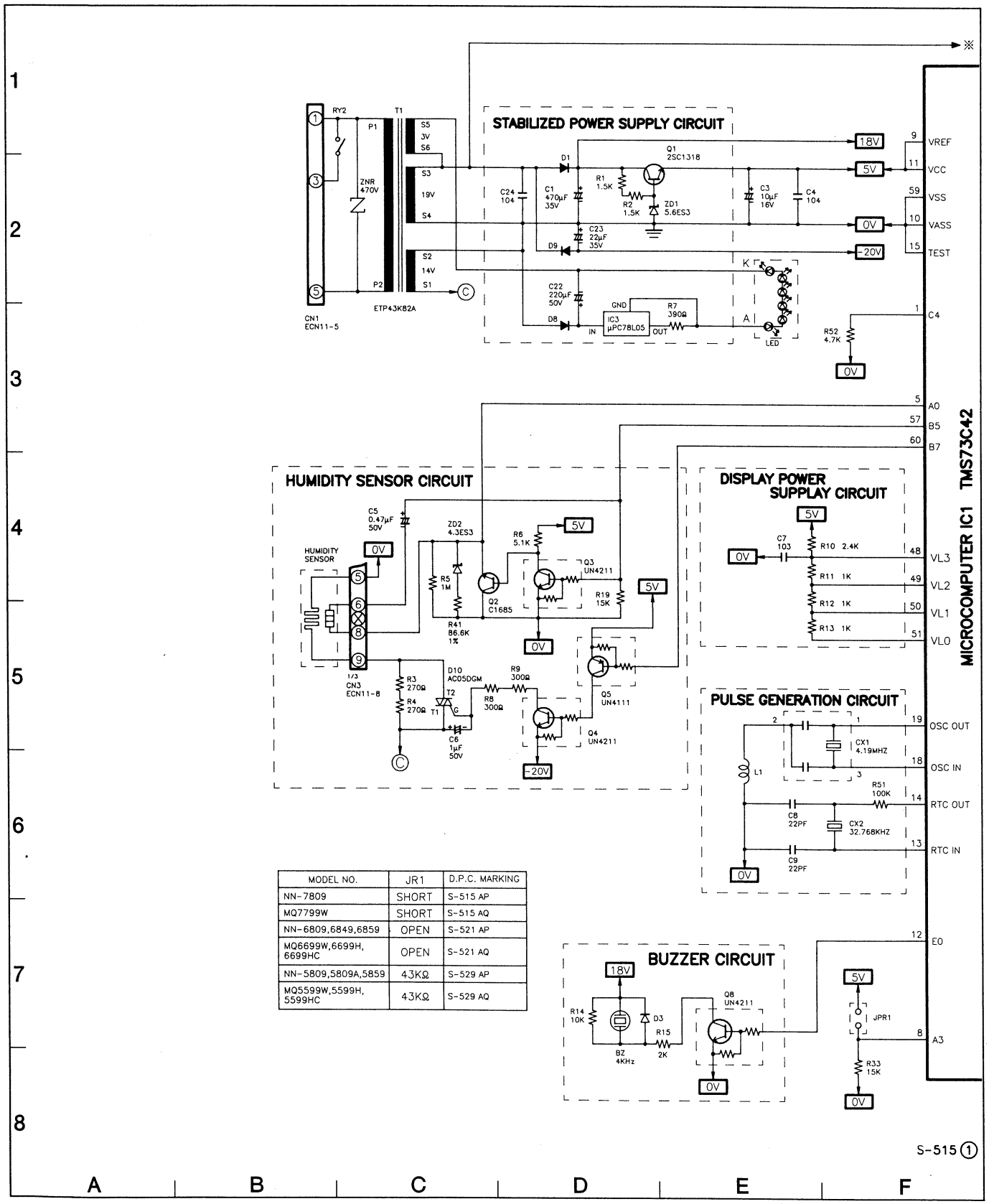
NOTE 4: When ordering the roller B assy, three rollers will be shipped. When replacing the roller B, three rollers should be replaced at the same time.
Otherwise the glass cooking tray may not turn smoothly.
5: Please order DHHS label or CSA caution label together.
6: Please order name plate together.
7: When this lead wire is open, replace together with magnetron.

MEMO

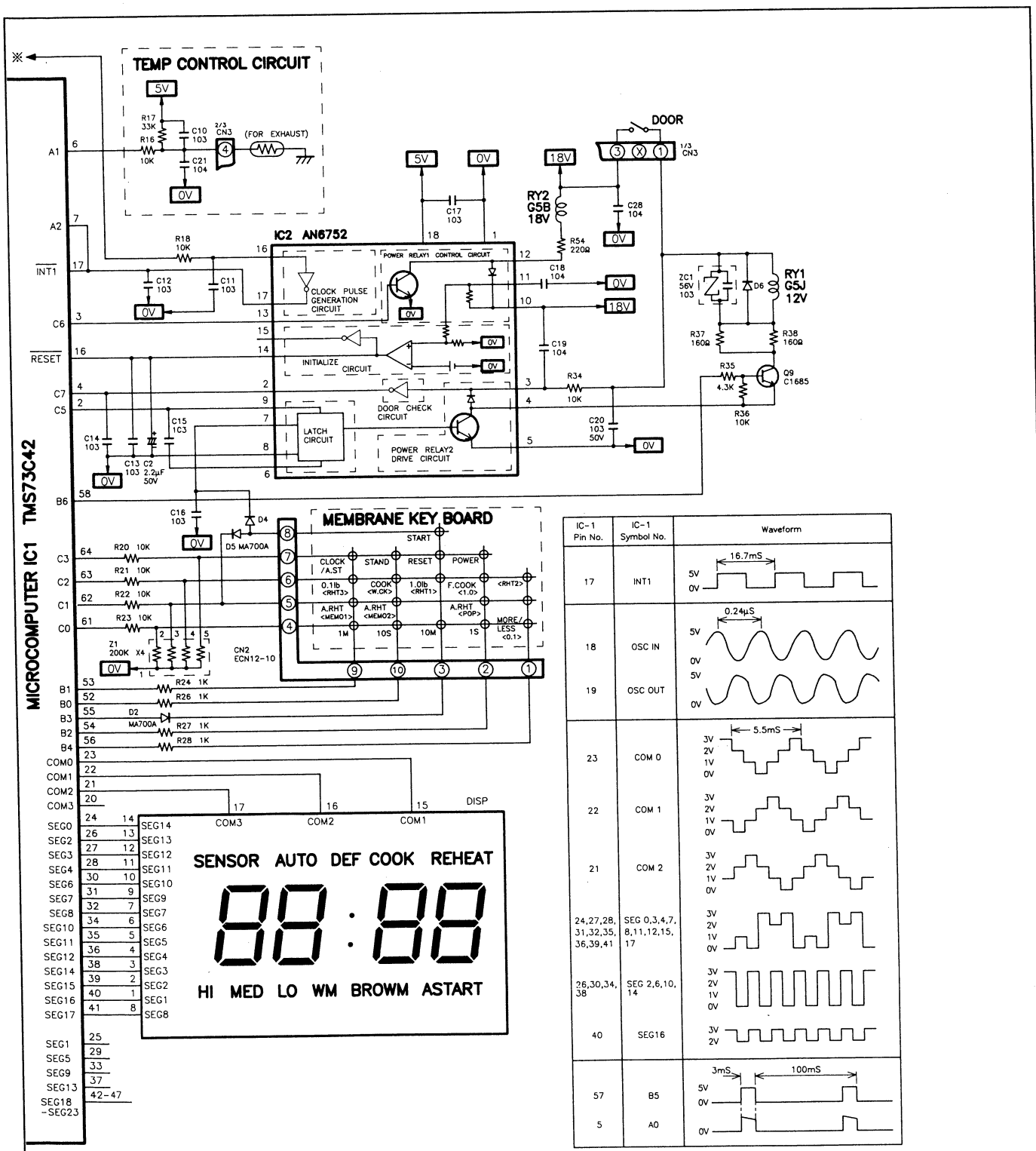
DIGITAL PROGRAMMER CIRCUIT

NN-7809,NN-6809,NN-6849,NN-6859,NN-5809,NN-5809A,NN-5859, MQ7799W,MQ6699W,MQ6699H,MQ6699HC,MQ5599W,MQ5599H,MQ5599HC

SCHEMATIC DIAGRAM



MODEL NO.	JR1	D.P.C. MARKING
NN-7809	SHORT	S-515 AP
MQ7799W	SHORT	S-515 AQ
NN-6809,6849,6859	OPEN	S-521 AP
MQ6699W,6699H, 6699HC	OPEN	S-521 AQ
NN-5809,5809A,5859	4.3KΩ	S-529 AP
MQ5599W,5599H, 5599HC	4.3KΩ	S-529 AQ



IC-1 Pin No.	IC-1 Symbol No.	Waveform
17	INT1	16.7mS, 5V, 0V
18	OSC IN	0.24μS, 5V, 0V
19	OSC OUT	5V, 0V
23	COM 0	5.5mS, 3V, 2V, 1V, 0V
22	COM 1	3V, 2V, 1V, 0V
21	COM 2	3V, 2V, 1V, 0V
24,27,28, 31,32,35, 36,39,41	SEG 0,3,4,7, 8,11,12,15, 17	3V, 2V, 1V, 0V
26,30,34, 38	SEG 2,6,10, 14	3V, 2V, 1V, 0V
40	SEG16	3V, 2V
57	B5	3mS, 100mS, 5V, 0V
5	A0	0V

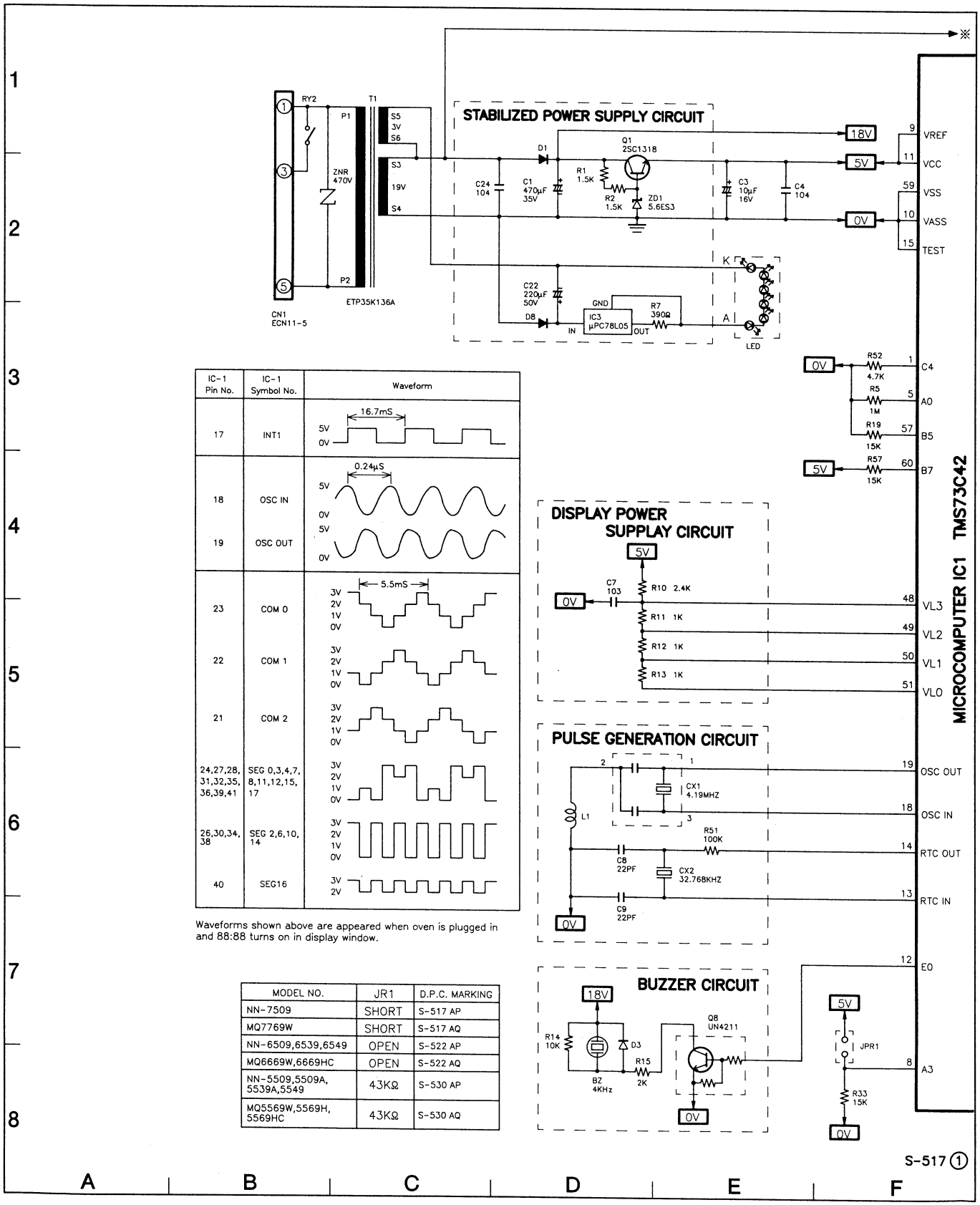
Waveforms shown above are appeared when oven is plugged in and 88:88 turns on in display window except B5 and A0 which appeared only while humidity sensor operation.

S-515 ②

DIGITAL PROGRAMMER CIRCUIT

NN-7509,NN-6509,NN-6539,NN-6549,NN-5509,NN-5509A,NN-5539A,NN-5549, MQ7769W,MQ6669W,MQ6669HC,MQ5569W,MQ5569H,MQ5569HC

SCHEMATIC DIAGRAM

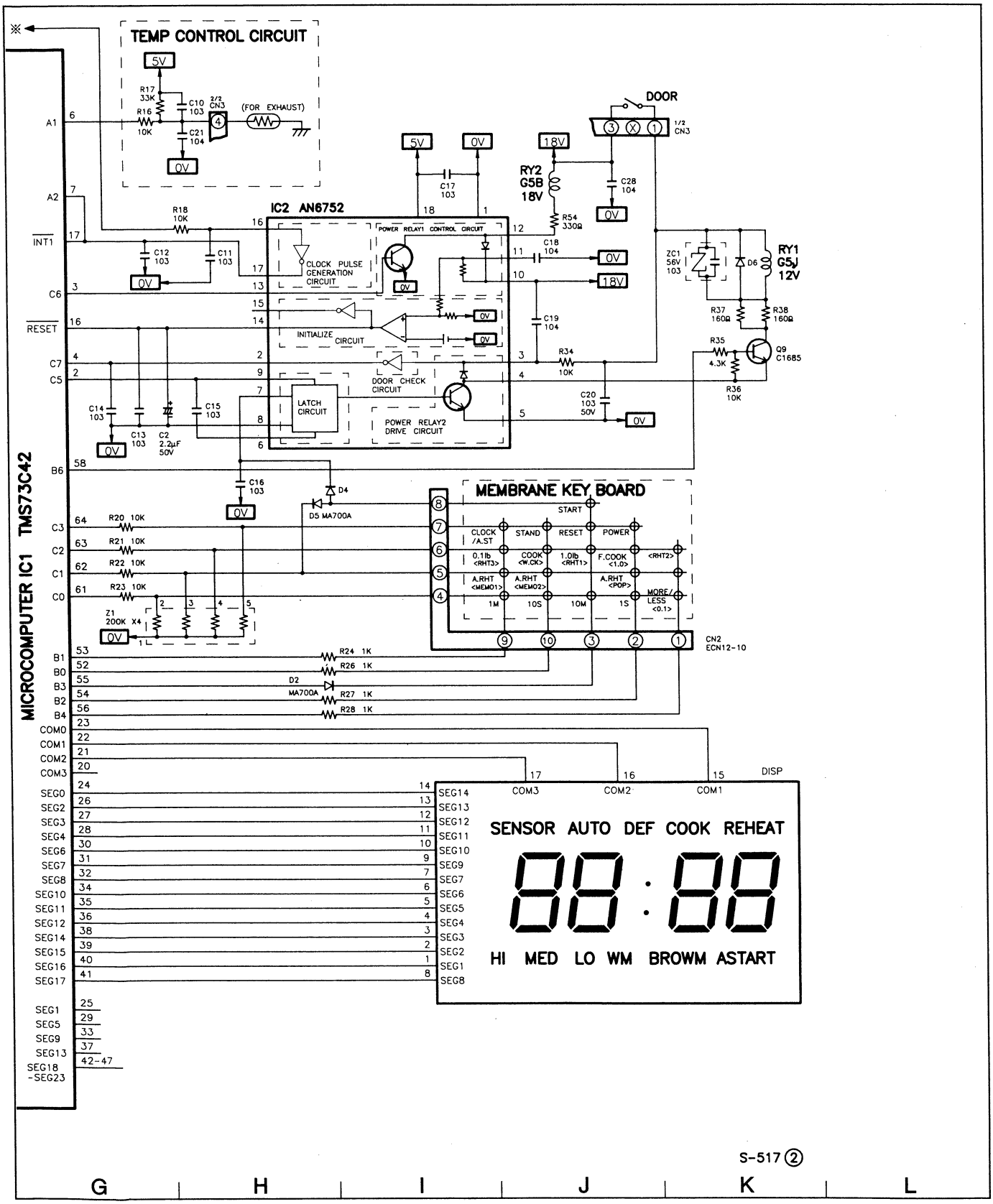


IC-1 Pin No.	IC-1 Symbol No.	Waveform
17	INT1	16.7mS, 5V, 0V
18	OSC IN	0.24µS, 5V, 0V
19	OSC OUT	5V, 0V
23	COM 0	5.5mS, 3V, 2V, 1V, 0V
22	COM 1	3V, 2V, 1V, 0V
21	COM 2	3V, 2V, 1V, 0V
24,27,28, 31,32,35, 36,39,41	SEG 0,3,4,7, 8,11,12,15, 17	3V, 2V, 1V, 0V
26,30,34, 38	SEG 2,6,10, 14	3V, 2V, 1V, 0V
40	SEG16	3V, 2V

Waveforms shown above are appeared when oven is plugged in and 88:88 turns on in display window.

MODEL NO.	JR1	D.P.C. MARKING
NN-7509	SHORT	S-517 AP
MQ7769W	SHORT	S-517 AQ
NN-6509,6539,6549	OPEN	S-522 AP
MQ6669W,6669HC	OPEN	S-522 AQ
NN-5509,5509A, 5539A,5549	43KΩ	S-530 AP
MQ5569W,5569H, 5569HC	43KΩ	S-530 AQ

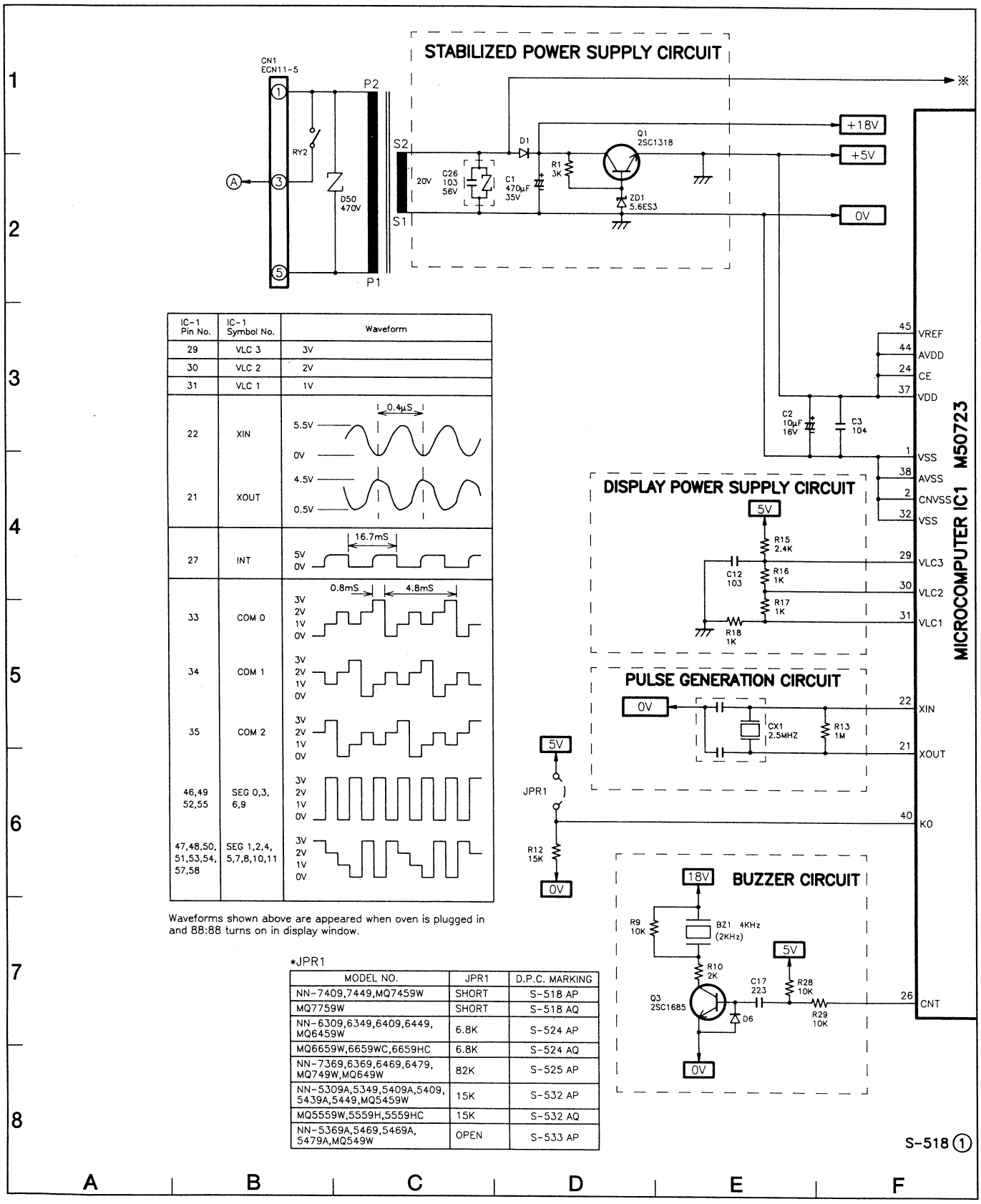
S-517 ①


TEMP CONTROL CIRCUIT
(FOR EXHAUST)
DOOR
IC2 AN6752
POWER RELAY1 CONTROL CIRCUIT
CLOCK PULSE GENERATION CIRCUIT
INITIALIZE CIRCUIT
DOOR CHECK CIRCUIT
LATCH CIRCUIT
POWER RELAY2 DRIVE CIRCUIT
RY2 G5B 18V
RY1 G5J 12V
MEMBRANE KEY BOARD
START
CLOCK /A.ST
STAND
RESET
POWER
CN2 ECN12-10
MICROCOMPUTER IC1 TMS73C42
DISP
COM3
COM2
COM1
SENSOR AUTO DEF COOK REHEAT
HI MED LO WM BROWM ASTART
S-517 ②

DIGITAL PROGRAMMER CIRCUIT

NN-7409,NN-7449,NN-6309,NN-6349,NN-6409,NN-6449,NN-7369,NN-6369,NN-6469,NN-6479,NN-5309A,NN-5349, NN-5409A,NN-5409,NN-5439A,NN-5449,NN-5369A,NN-5469A,NN-5479A,MQ7459W,MQ7759W,MQ6459W,MQ6659W, MQ6659WC,MQ6659HC,MQ749W,MQ649W,MQ5459W,MQ5559W,MQ5559H,MQ5559HC,MQ549W

SCHEMATIC DIAGRAM

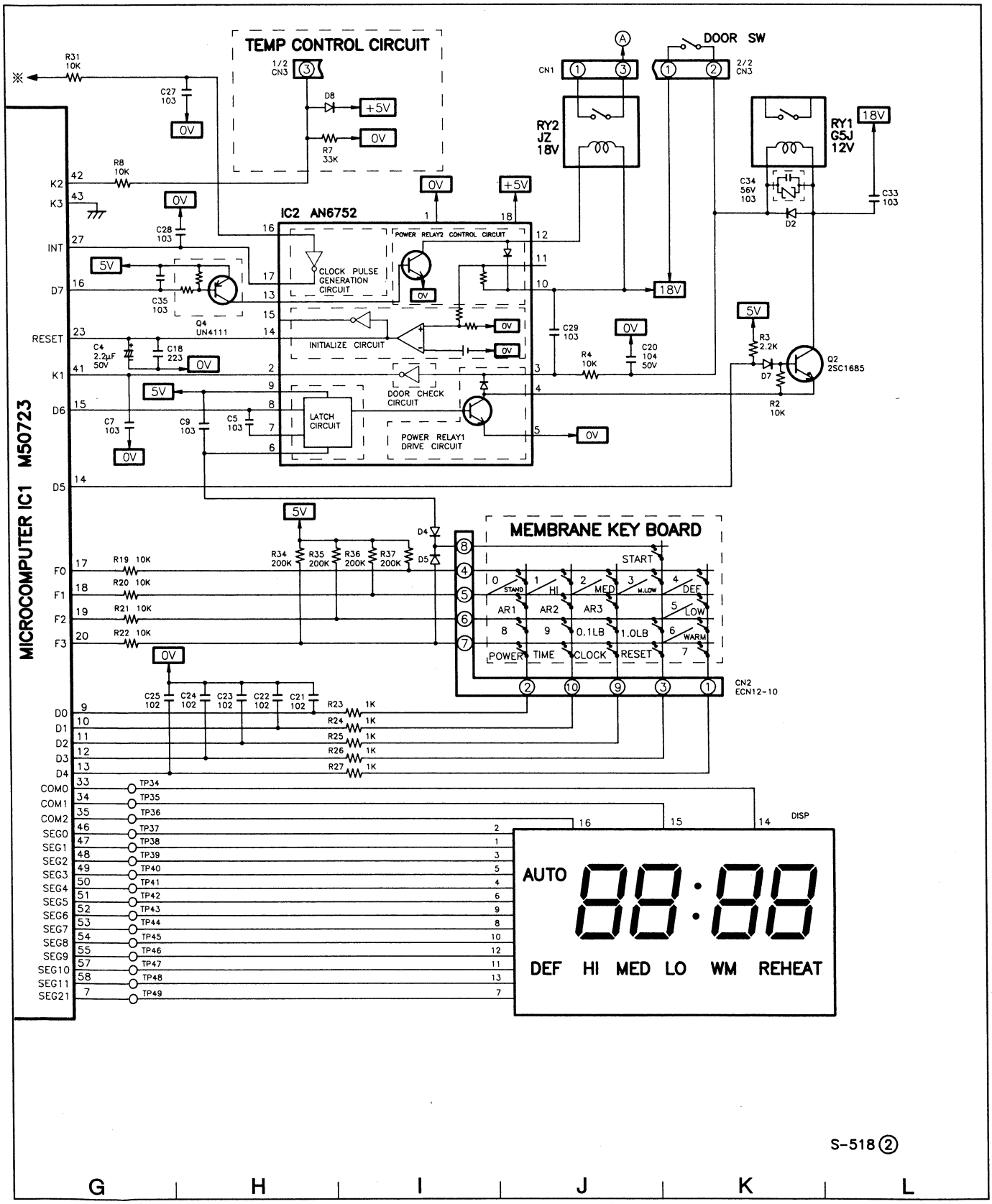


IC-1 Pin No.	IC-1 Symbol No.	Waveform
29	VLC 3	3V
30	VLC 2	2V
31	VLC 1	1V
22	XIN	0.4µS, 5.5V, 0V
21	XOUT	4.5V, 0.5V
27	INT	16.7mS, 5V, 0V
33	COM 0	0.8mS, 4.8mS, 3V, 2V, 1V, 0V
34	COM 1	3V, 2V, 1V, 0V
35	COM 2	3V, 2V, 1V, 0V
46,49 52,55	SEG 0,3, 6,9	3V, 2V, 1V, 0V
47,48,50, 51,53,54, 57,58	SEG 1,2,4, 5,7,8,10,11	3V, 2V, 1V, 0V

Waveforms shown above are appeared when oven is plugged in and 88:88 turns on in display window.

*JPR1

MODEL NO.	JPR1	D.P.C. MARKING
NN-7409,7449,MQ7459W	SHORT	S-518 AP
MQ7759W	SHORT	S-518 AQ
NN-6309,6349,6409,6449, MQ6459W	6.8K	S-524 AP
MQ6659W,6659WC,6659HC	6.8K	S-524 AQ
NN-7369,6369,6469,6479, MQ749W,MQ649W	82K	S-525 AP
NN-5309A,5349,5409A,5409, 5439A,5449,MQ5459W	15K	S-532 AP
MQ5559W,5559H,5559HC	15K	S-532 AQ
NN-5369A,5469,5469A, 5479A,MQ549W	OPEN	S-533 AP


TEMP CONTROL CIRCUIT
DOOR SW
IC2 AN6752
POWER RELAY2 CONTROL CIRCUIT
CLOCK PULSE GENERATION CIRCUIT
INITIALIZE CIRCUIT
DOOR CHECK CIRCUIT
LATCH CIRCUIT
POWER RELAY1 DRIVE CIRCUIT
RY2 JZ 18V
RY1 G5J 12V
MICROCOMPUTER IC1 M50723
MEMBRANE KEY BOARD
START
STAND
HI
MED
M.LOW
DEF
LOW
WARM
AR1
AR2
AR3
0.1LB
1.0LB
POWER
TIME
CLOCK
RESET
CN2 ECN12-10
DISP
AUTO
88:88
DEF HI MED LO WM REHEAT
S-518 ②

PARTS LIST NN-7809,NN-6809,NN-6849,NN-6859,NN-5809,NN-5809A,NN-5859, MQ7799W,MQ6699W,MQ6699H,MQ6699HC,MQ5599W,MQ5599H,MQ5599HC

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
DISP	A64565150AP	Liquid Crystal Display	1	
T1	A62494690AP	Low Voltage Transformer	1	12VA ETP43K82A
CN1	AEEMMC01505W	5 pin connector	1	
CN2	AEEM10FDZBTM	10 pin connector	1	
CN3	AEEMMA1BD09W	9 pin connector	1	
BZ	AEFB17EP4001	Buzzer	1	4kHz
CX1	AEFFT4R19GW	Ceramic Resonator	1	4.19MHz
CX2	AEFFCFS308	Crystal	1	32.768kHz
RY1	AEG5J1EG12A	Power Relay	1	(12V)
RY2	AEAWJZDC18A	Power Relay	1	(18V)
ZC1	EZCDB6R560M	Varistor	1	
ZNR	AERZ470NR10A	ZNR	1	
L1	EXCELDR35C	RFC	1	
LED	LN063487PS	LED assy	1	LEDX6
IC1	AEICC4277224	L.S.I. (MOS Microprocessor IC)	(1)	515AP, 521AP, 529AP
	AEICC4277219	L.S.I. (MOS Microprocessor IC)	(1)	515AQ, 521AQ, 529AQ
IC2	AN6752	I.C. (Bipolar Linear IC)	1	
IC3	AEICUPC78L05	I.C.	1	
Q1	2SC1318-R	Transistor, Si 400mW	1	200MHz
Q2,9	2SC1685-R	Transistor, Si 250mW	2	150MHz
Q3,4,8	UN4211	Transistor, Si	3	
Q5	UN4111	Transistor, Si 300mW	1	
D1,8,9	AEDNERA1502	Diode, Si	3	(0.1A)
D2,5	MA700A	Diode, Si	2	(0.03A)
D3,4,6	MA196	Diode, Si	3	(0.1A)
D10	AESMAC03DGM	Triac	1	
ZD1	AEDZ5R6ES3T1	Zener Diode, Si	1	RD5.6ES3
ZD2	AEDZ4R3ES3T1	Zener Diode, Si	1	RD4.3ES3
C1	ECEA1VU561YE	Electrolytic capacitor, Al	1	560μF, −10%+30%, 35V
C2	ECEA1HU2R2B	Electrolytic capacitor, Al	1	2.2μF, −10%+30%, 50V
C3	ECEA1CU100B	Electrolytic capacitor, Al	1	10μF, −10%+30%, 16V
C4,18,19, 21,24,28	AECF50F104Z	Ceramic capacitor	6	0.1μF, −20%+80%, 50V
C5	ECEA1HUR47B	Electrolytic capacitor, Al	1	0.47μF, −10%+ 30%, 50V
C6	ECEA1HU010B	Electrolytic capacitor, Al	1	1.0μF, −10%+30%, 50V
C7,10,11, 12,13,14, 15,16,17	ECBT1E103ZF5	Ceramic capacitor	9	(Single layer) 0.01μF, −20%+ 80%, 25V
C8,9	ECBT1H220J5	Ceramic capacitor	2	(Single layer) 0.022μF, −20%+ 80%, 50V
C20	ECKR1H103ZF	Ceramic capacitor	1	(Single layer) 0.01μF, −20%+ 80%, 50V
C22	ECEA1HU221B	Electrolytic capacitor, Al	1	220μF, −10%+30%, 50V
C23	ECEA1VU220B	Electrolytic capacitor, Al	1	22μF, −10%+30%, 35V
R1,2	ERDS2TJ152T	Carbon film resistor	2	1.5kΩ, ±5%, 1/4W
R3,4	ERDS2TJ271T	Carbon film resistor	2	270Ω, ±5%, 1/4W
R5	ERDS2TJ105T	Carbon film resistor	1	1MΩ, ±5%, 1/4W
R6	ERDS2TJ512T	Carbon film resistor	1	5.1kΩ, ±5%, 1/4W
R7	ERDS2TJ391T	Carbon film resistor	1	390Ω, ±5%, 1/4W
R8,9	ERDS2TJ301T	Carbon film resistor	2	300Ω, ±5%, 1/4W
R10	ERDS2TJ242T	Carbon film resistor	1	2.4kΩ, ±5%, 1/4W
R11,12, 13,24,26, 27,28	ERDS2TJ102T	Carbon film resistor	7	1.0kΩ, ±5%, 1/4W
R14,16, 18,20,21, 22,23,34, 36	ERDS2TJ103T	Carbon film resistor	9	10kΩ, ±5%, 1/4W
R15	ERDS2TJ202T	Carbon film resistor	1	2kΩ, ±5%, 1/4W
R17	ERDS2TJ333T	Carbon film resistor	1	33kΩ, ±5%, 1/4W
R19,33	ERDS2TJ153T	Carbon film resistor	2	15kΩ, ±5%, 1/4W
R35	ERDS2TJ432T	Carbon film resistor	1	4.3kΩ, ±5%, 1/4W
R37,38	ERDS2TJ161T	Carbon film resistor	2	160Ω, ±5%, 1/4W
R41	EROS2TKF8662	Metal film resistor	1	86.6kΩ, ±1%, 1/4W
R51	ERDS2TJ104T	Carbon film resistor	1	100kΩ, ±5%, 1/4W
R52	ERDS2TJ221T	Carbon film resistor	1	220Ω, ±5%, 1/4W
R54	ERDS2TJ472T	Carbon film resistor	1	4.7kΩ, ±5%, 1/4W
Z1	AEXB04204J	Compound resistor	1	200kΩ×4, ±5%, 1/8W
JPR1	ERD25VJ433T	Carbon film resistor	(1)	529AP, 529AQ 43kΩ, ±5%, 1/4W

PARTS LIST NN-7509,NN-6509,NN-6539,NN-6549,NN-5509,NN-5509A,NN-5539A, NN-5549,MQ7769W,MQ6669W,MQ6669HC,MQ5569W,MQ5569H,MQ5569HC

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
DISP	A64565150AP	Liquid Crystal Display	1	
T1	A62494010AP	Low Voltage Transformer	1	4.3VA ETP35K136A
CN1	AEEMMC01505W	5 pin connector	1	
CN2	AEEM10FDZBTM	10 pin connector	1	
CN3	AEEMMA00D04W	4 pin connector	1	
BZ	AEFB17EP4001	Buzzer	1	4kHz
CX1	AEFFT4R19GW	Ceramic Resonator	1	4.19MHz
CX2	AEFFCFS308	Crystal	1	32.768kHz
RY1	AEG5J1EG12A	Power Relay	1	(12V)
RY2	AEAWJZDC18A	Power Relay	1	(18V)
ZC1	EZCDB6R560M	Varistor	1	
ZNR	AERZ470NR10A	ZNR	1	
L1	EXCELDR35C	RFC	1	
LED	LN063487PS	LED assy	1	LEDX6
IC1	AEICC4277220	L.S.I. (MOS Microprocessor IC)	(1)	517AP, 522AP, 530AP
	AEICC4277221	L.S.I. (MOS Microprocessor IC)	(1)	517AQ, 522AQ, 530AQ
IC2	AN6752	I.C. (Bipolar Linear IC)	1	
IC3	AEICUPC78L05	I.C.	1	
Q1	2SC1318-R	Transistor, Si 400mW	1	200MHz
Q8	UN4211	Transistor, Si	1	
Q9	2SC1685-R	Transistor, Si 250mW	1	150MHz
D1,8	AEDNERA1502	Diode, Si	2	(0.1A)
D2,5	MA700A	Diode, Si	2	(0.03A)
D3,4,6	MA196	Diode, Si	3	(0.1A)
ZD1	AEDZ5R6ES3T1	Zener Diode, Si	1	RD5.6ES3
C1	ECEA1VU561YE	Electrolytic capacitor, Al	1	560μF, −10%+30%, 35V
C2	ECEA1HU2R2B	Electrolytic capacitor, Al	1	2.2μF, −10%+30%, 50V
C3	ECEA1CU100B	Electrolytic capacitor, Al	1	10μF, −10%+30%, 16V
C4,18,19, 21,24,28	AECF50F104Z	Ceramic capacitor	6	0.1μF, −20%+80%, 50V
C7,10,11, 12,13,14, 15,16,17	ECBT1E103ZF5	Ceramic capacitor	9	(Single layer) 0.01μF, −20%+ 80%, 25V
C8,9	ECBT1H220J5	Ceramic capacitor	2	(Single layer) 0.022μF, −20%+ 80%, 50V
C20	ECKR1H103ZF	Ceramic capacitor	1	(Single layer) 0.01μF, −20%+ 80%, 50V
C22	ECEA1HU221B	Electrolytic capacitor, Al	1	220μF, −10%+30%, 50V
R1,2	ERDS2TJ152T	Carbon film resistor	2	1.5kΩ, ±5%, 1/4W

(S-515 APH etc)

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
R5	ERDS2TJ105T	Carbon film resistor	1	1MΩ, ±5%, 1/4W
R7	ERDS2TJ391T	Carbon film resistor	1	390Ω, ±5%, 1/4W
R10	ERDS2TJ242T	Carbon film resistor	1	2.4kΩ, ±5%, 1/4W
R11,12, 13,24,26, 27,28	ERDS2TJ102T	Carbon film resistor	7	1.0kΩ, ±5%, 1/4W
R14,16, 18,20,21, 22,23,34, 36	ERDS2TJ103T	Carbon film resistor	9	10kΩ, ±5%, 1/4W
R15	ERDS2TJ202T	Carbon film resistor	1	2kΩ, ±5%, 1/4W
R17	ERDS2TJ333T	Carbon film resistor	1	33kΩ, ±5%, 1/4W

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
R19,33, 57	ERDS2TJ153T	Carbon film resistor	3	15kΩ, ±5%, 1/4W
R35	ERDS2TJ432T	Carbon film resistor	1	4.3kΩ, ±5%, 1/4W
R37,38	ERDS2TJ161T	Carbon film resistor	2	160Ω, ±5%, 1/4W
R51	ERDS2TJ104T	Carbon film resistor	1	100kΩ, ±5%, 1/4W
R52	ERDS2TJ472T	Carbon film resistor	1	4.7kΩ, ±5%, 1/4W
R54	ERDS2TJ331T	Carbon film resistor	1	330Ω, ±5%, 1/4W
Z1	AEXB04204J	Compound resistor	1	200kΩX4, ±5%, 1/8W
JPR1	ERD25VJ433T	Carbon film resistor	(1)	530AP, 530AQ 43kΩ, ±5%, 1/4W

PARTS LIST NN-7409,NN-7449,NN-6309,NN-6349,NN-6409,NN-6449,NN-7369, NN-6369,NN-6469,NN-6479,NN-5309A,NN-5349,NN-5409A,NN-5409, NN-5439A,NN-5449,NN-5369A,NN-5469A,NN-5479A,MQ7459W,MQ7759W, MQ6459W,MQ6659W,MQ6659WC,MQ6659HC,MQ749W,MQ649W,MQ5459W, MQ5559W,MQ5559H,MQ5559HC,MQ549W

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
DISP	A64565180AP	Liquid Crystal Display	1	
SPACER	A82845180AP	Spacer cushion	1	For DISP
T1	A62494000AP	Low Voltage Transformer	1	4.2VA ETP35K135A
CN1	AEEMMC01505W	5 pin connector	1	
CN2	AEEM10FDZBTM	10 pin connector	1	
CN3	AEEMMC00703W	3 pin connector	1	
BZ	AEFB17EP4001	Buzzer	1	4kHz
CX1	AEFFT2R50GW	Ceramic Resonator	1	2.5MHz
RY1	AEG5J1EG12A	Power Relay	1	(12V)
RY2	AEAWJZDC18A	Power Relay	1	(18V)
C26,34	EZCDB6R560M	Varistor	2	
ZNR	ERZC10DK471F	ZNR	1	
IC1	AEIC50723202	L.S.I. (MOS Microprocessor IC)	(1)	518AP, 524AP, 525AP, 532AP, 533AP
	AEIC50723201	L.S.I. (MOS Microprocessor IC)	(1)	518AQ, 524AQ, 532AQ
IC2	AEIC102977AN	I.C.	1	
Q1	2SC1318-R	Transistor, Si 400mW	1	200MHz
Q2,3	2SC1685-R	Transistor, Si 250mW	2	150MHz
Q4	UN4111	Transistor, Si	1	
D1	AEDNERA1502	Diode, Si	1	(0.1A)
D2,4,5, 6,7,8	MA195	Diode, Si	6	(0.1A)
ZD1	AEDZ5R6ES3T1	Zener Diode, Si	1	RD5.6ES3
C1	ECEA1VU561YE	Electrolytic capacitor, Al	1	560μF, −10%+30%, 35V
C2	ECEA1CU100B	Electrolytic capacitor, Al	1	10μF, −10%+30%, 16V
C3,20	AECF50F104Z	Ceramic capacitor	2	0.1μF, −20%+80%, 50V
C4	ECEA1HU2R2B	Electrolytic capacitor, Al	1	2.2μF, −10%+30%, 50V

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
C5,7,9, 12,27,28, 29,33,35	ECBT1E103ZF5	Ceramic capacitor	9	0.01μF, −20%+ 80%, 25V
C17,18	ECBT1E223ZF5	Ceramic capacitor	2	(Single layer) 0.022μF, −20%+ 80%, 25V
C21,22, 23,24,25	ECBT1H102KB5	Ceramic capacitor	5	(Single layer) 0.001μF, −20%+ 80%, 50V
R1	ERDS2TJ302T	Carbon film resistor	1	3kΩ, ±5%, 1/4W
R2,4,8, 9,19,20, 21,22,28, 29,31	ERDS2TJ103T	Carbon film resistor	11	10kΩ, ±5%, 1/4W
R3	ERDS2TJ222T	Carbon film resistor	1	2.2kΩ, ±5%, 1/4W
R7	ERDS2TJ333T	Carbon film resistor	1	33kΩ, ±5%, 1/4W
R10	ERDS2TJ202T	Carbon film resistor	1	2kΩ, ±5%, 1/4W
R12	ERDS2TJ153T	Carbon film resistor	1	15kΩ, ±5%, 1/4W
R13	ERDS2TJ105T	Carbon film resistor	1	1MΩ, ±5%, 1/4W
R15	ERDS2TJ242T	Carbon film resistor	1	2.4kΩ, ±5%, 1/4W
R16,17, 18,23,24, 25,26,27	ERDS2TJ102T	Carbon film resistor	8	1.0kΩ, ±5%, 1/4W
R34,35, 36,37	ERDS2TJ204T	Carbon film resistor	4	200kΩ, ±5%, 1/4W
JPR1	ERD25VJ682T	Carbon film resistor	(1)	524AP, 524AQ 6.8kΩ, ±5%, 1/4W
	ERD25VJ823T	Carbon film resistor	(1)	525AP 82kΩ, ±5%, 1/4W
	ERD25VJ153T	Carbon film resistor	(1)	532AP, 532AQ 15kΩ, ±5%, 1/4W

SERVICE FIXTURES AND TOOLS

EXTENSION CABLES

NOTE: To be used when repairing the DPC board assembly directly on the oven for easy access of the board.

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
	AT40M003	3 pin Extension Cable	1	Cable No. 36
	AT40M005	5 pin Extension Cable	1	Cable No. 17
	AT40E006	1 pinX6 Extension Cable	1	Cable No. 9
	AT40M009	9 pin Extension Cable	1	Cable No. 33
	AT40M004	4 pin Extension Cable	1	Cable No. 16

DPC COMMON CHECKER AND ITS CABLE

NOTE: To be used only when DPC common checker is available.

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
	ANE600ZK70AP	DPC. Common Checker	1	
	AT30A5150AP	DPC. Checker Cable	1	NOTE

(S-515 APH etc)

WP-369
S-515 APH
Printed in Japan
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ORDER NO. CAD89110235S1
E1

Service Manual

Supplement

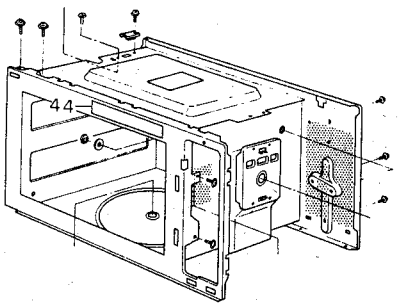
Microwave Oven

NN-6309, NN-6349, NN-6369, NN-6479, NN-6409
NN-6449, NN-6469, NN-6509, NN-6539, NN-6549
NN-6809, NN-6849, NN-6859, NN-7369, NN-7409
NN-7449, NN-7509, NN-7809

Please use this Supplement Service Manual together with the Service Manual for Model No. NN-6309, etc, Order No. CAD89050149C1.

Subject: CORRECTION OF PARTS LIST

Please revice the original parts list in the Service Manual to conform to the change(s) shown herein. If new part numbers are shown, be sure to use them when ordering parts.

Reason for Change	
1. Improve performance	
2. Change of material or dimension	
3. To meet approved specification	
4. Standardization	
5. Addition	
6. Deletion	
7. Correction	
8. Other	

Interchangeability Code

	Parts	Set Production	
A	Original	Early	Original or new parts may be used in early or late production sets. Use original parts until exhausted, then stock new parts.
	New	Late	
B	Original	Early	Original parts may be used in early production sets only. New parts may be used in early or late production sets. Use original parts where possible, then stock new parts.
	New	Late	
C	Original	Early	New parts only may be used in early or late production sets. Stock new parts.
	New	Late	
D	Original	Early	Original parts may be used in early production sets only. New parts may be used in late production sets only. Stock both original and new parts.
	New	Late	
E	Other		

Part Number

Ref. No.	Original Part No.	New Part No.	Part Name & Descriptions	Interchange-ability Code	Reason of Changes	Remarks
3	A10095210AP	A10095240AP	Cabinet body	C	7	NN-6309, NN-6369, NN-6409, NN-6469, NN-6479, NN-6509, NN-6539, NN-6809
16	A61454650AP	A61455180AP	Thermal cutout	C	7	NN-7369, NN-7409, NN-7449, NN-7509, NN-7809
19	A00334650AP	A00335020AP	Fuse label	A	2	

Panasonic®

Matsushita Services Company
50 Meadowland Parkway
Secaucus, New Jersey 07094

Matsushita Electric of Canada Limited
5770 Ambler Drive, Mississauga
Ontario, L4W 2T3

Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc.
San Gabriel Industrial Park
65th Infantry Ave. Km.9.5
Carolina, P.R. 00630

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Ref. No.	Original Part No.	New Part No.	Part Name & Descriptions	Interchange-ability Code	Reason of Changes	Remarks
44	————	A03345220AP	Menu label	——	5	NN-6509, NN-6539, NN-6549
44	————	A03345150AP	Menu label	——	5	NN-6809, NN-6849, NN-6859
D7	ANE0411K20CP	A04115020CQ	CSA caution label	C	8	CPH
W4	A03535180AP	A03535170AP	Lead wire	C	8	NN-7509, NN-6509, NN-6539, NN-6549

S-515 APH, etc
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